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UNITED STATES DEPARTMENT OF AGRICULTURE

Office of Information

Feb. 1, 1942

Washington, D. C.

Food for Freedom Program

Background Information Series - No. 1

✓ INFORMATION ON 1942 PRODUCTION GOALS, ARRANGED BY CLASSES OF COMMODITIES

(The original Food For Freedom agricultural production goals were announced September 8, 1941; the goals as revised after Pearl Harbor were announced January 16, 1942. "September goal" refers to the former.)

OVER-ALL: The new 1942 production goals represent 119 percent of average annual farm production in the 1935-1939 period or, with cotton, wheat, and tobacco omitted, 125 percent; production in the all-time-high year of 1941 ran only 113 and 116 percent, respectively, of average annual production in the 1935-39 period.

DAIRY PRODUCTS

Percentage of
1941 Production

MILK:

107

125 billion pounds, same as September goal; 116½ billion pounds in 1941. To stimulate production of cheese, evaporated milk, and dried milk, prices of these commodities are supported at 85 percent of parity. Capacity production needed.

EGGS:

113

4.2 billion dozen compared with 4 billion dozen in September goal and a 1941 production of 3,728,000,000 dozen. Price support at 85 percent of parity. Expect to reach egg goal by Spring.

EGGSHOGS:

114

(and Lard)

Slaughter of 83 million head compared with 79.3 million head in September goal and a 1941 slaughter of 72½ million head. Price support at 85 percent of parity. Lard: An increase of 300 million pounds in 1942 by raising the yield of lard from hogs slaughtered and changing relationship between lard and meat prices. Increase in hog numbers is keeping pace with the increase in demand.

MEATSBEEF:

108

(cattle & calves)

Slaughter of 28 million head, the same as estimated in September, compared with a 1941 slaughter of 25,905,000. Marketing equal to estimated increases in numbers is recommended to stabilize numbers and to increase the available supply of meat.

SHEEP:

101

(and Lambs)

Slaughter of 22.9 million sheep and lambs, the same as estimated in September, compared with a 1941 slaughter of 22,630,000.

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Percentage of
1941 production

CHICKENS:

110 Marketings of 644 million, the same goal as in September, as compared with a 1941 production of 585 million. Price support at 85 percent of parity excludes broilers. Adequate increase in chickens will automatically produce an increase in numbers for egg production.

TURKEYS:

110 Marketings of 35 3/4 million, estimated, as compared with 32 1/2 million in 1941.

FATS AND OILS

PEANUTS:

255 5 million acres compared with 3 1/2 million-acre September goal and a 1941 production of 1,964,000 acres. Price support at 85 percent of the comparable price at beginning of the marketing year, August 1; but not less than \$32 per ton for U.S. No. 1 Spanish type, \$78 for No. 1 Runner type, and \$70 for Class A Virginia type, delivered to an approved local receiving agency. Covers peanuts for oil only. All-out production of peanuts for oil needed.

SOYBEANS:

154 9 million acres compared with 7 million-acre September goal and a 1941 production of 5,855,000 acres. Price support at 85 percent of the comparable price at beginning of the marketing year, October 1; but not less than \$1.60 per bushel, farm basis, for U.S. No. 2 Yellow of recognized varieties of high oil content as designated by State agricultural experiment stations, with approval of the War Boards. Applies to soybeans for oil only. All-out production needed.

FLAXSEED:

119 4 1/2 million acres compared with both a September goal and 1941 seedings of 3,367,000 acres. Price support at 85 percent of the parity price at beginning of the marketing year, June 1, but not less than \$2.10 per bushel, farm basis. Loans averaging at least \$2.10 per bushel, farm basis - with location and grade differentials.

CANNED VEGETABLES

CANNING PEAS:

132 38 million cases as compared with 28.7 million in 1941; goal set on December 19, 1942. U.S.D.A. obligates itself to buy all quantities of 1942 canned peas offered to it through October 31, 1942 at base prices of \$1.10 per dozen No. 2 cans, Alaska or Sweet, f.o.b. cannery, U.S. Grade C, with price differentials for other grades. Cannery must pay growers prices recommended by the War Boards in order to be certified by the Boards for sales to the U.S.D.A. Minimum prices paid to growers by canners must be not less than \$17.50 a ton more than the comparable average prices paid in the same region in 1940. Production up to the limit of processing capacity desired.

Percentage of
1941 production

CANNING TOMATOES:

118

40 million cases as compared with 34 million in 1941; goal set on December 19, 1942. U.S.D.A. obligates itself to buy all quantities of 1942 canned tomatoes offered to it through December 31, 1942 at base prices of 95 cents per dozen No. 2 cans, f.o.b. cannery, U.S. Grade C, with price differentials for other grades. Cannery must pay growers prices recommended by the War Boards in order to be certified by the Boards for sales to the U.S.D.A. Minimum prices paid to growers by cannery must be not less than \$5 a ton more than the comparable average prices paid in the same region in 1940. The \$5 minimum price increase is also recommended paid for tomatoes for tomato products though the U.S.D.A. contemplates no purchases of such products. Production up to the limit of processing capacity desired.

OTHER CANNED
VEGETABLES:

100

Canned vegetables other than peas and tomatoes should attain at least the same pack as in 1941. As a whole a canned vegetable pack 45 percent above the annual average 1936-40, or an increase of one-fifth over 1941, is the goal, but the main increase is in peas and tomatoes. Peas, tomatoes, corn, and snap beans constitute four-fifths of the pack ordinarily. We should have in 1942 about 18 million cases more of canned fruit and vegetables than in 1941; 4 million cases more for fruit; 14 for vegetables.

MARKET-GARDEN AND COMMERCIAL TRUCK VEGETABLES

MARKET GARDEN:

101

An estimated 1,075,000 acres, the same as that in September, as compared with an actual 1,065,000 acres in 1941. Producers can expect increased demand.

COMMERCIAL TRUCK:

110

An estimated 1,840,000 acres as compared with the September estimate of 1,775,000 acres and an actual 1,680,000 acres in 1941. Producers can expect increased demand.

DRIED VEGETABLES

DRY BEANS:

113

2,600,000 million acres as compared with 2,304,000 acres both in September and in 1941. Price support for White, Pink, Pinto, Medium White, Pea Beans, Great Northern, and California Small White, at 85 percent of the parity price at beginning of the marketing year, September 1, but not less than \$4.75 per hundred-weight for U.S. No. 1 and \$4.60 for No. 2, in bags, f.o.b. cars, at country shipping points. All-out production desired of varieties for which price support is given.

Percentage of
1941 production

DRY FIELD PEAS: 173 665,000 acres as compared with 384,000 in 1941; no September goal. Price support for Alaska, Blue Bell, First and Best, White Canada, Alderman, Perfection, Surprise, Thomas Laxton, at 85 percent of the comparable price at beginning of the marketing year, August 1, but not less than \$5.25 per hundredweight for U.S. No. 1 and \$5 for No. 2, in bags, f.o.b. cars at country shipping points. All-out production desired of varieties for which price support is given.

POTATOES

POTATOES: 110 An estimated 3,060,000 acres, as in September, compared with a 1941 planting of 2,793,000 acres. Price-support program to be announced.

SWEET POTATOES: 101 An estimated 850,000 acres as compared with 1941 plantings of 843,000.

FRESH AND DRIED FRUIT

FRESH FRUIT: 100 The same total production as in 1941, but less waste and more efficient marketing and distribution; 15,018,000 tons.

DRIED FRUIT: 119 An estimated production of 100,000 tons more than in 1941; a pack of 604,000 tons compared with a September goal of 525,000 and a pack of 507,000 tons in 1941.

FARM AND HOME GARDENS

GARDENS: 130 A goal, as in September, of 5,760,000 farm gardens compared with only 4,431,000 in 1941. Emphasis is placed only upon the making of farm, community, and school gardens where soil is good, supervision is competent, and wastage of scarce materials and equipment, as well as labor, will be avoided. There should be no all-out effort to make city and town gardens, or to blow up grass plots, lawns, parks, golf courses, playgrounds, or even ornamental gardens. Objective of the gardens: To enrich the diet of Americans and provide them better nourishment. Food should, so far as possible, be consumed when ready to eat near where grown so as to avoid processing, packaging, and transportation.

Percentage of
1941 production

CEREALS

WHEAT:

88

55 million acres as in the September goal, compared with 62.4 million in 1941; 100 million bushels, in addition to the normal feeding of 100 million, will be released for feed at prices comparable with that of corn in order to expand feed supplies in areas not adapted to corn and also to provide storage space for the new crop. Loans at 85 percent of parity.

RICE:

106

1,320,000 acres compared with September goal of 1,200,000 acres and plantings of 1,245,000 in 1941. Production should be at least an additional 5 million bushels. Loans at 85 percent of parity.

OATS:

102

An estimate of 40 million acres as in September; 39,363,000 acres in 1941. Production at least up to normal acreage urged, especially in areas not adapted to soybeans and corn.

BARLEY:

106

An estimate of 16 million acres; September estimate about 14,375,000 acres; 1941 plantings 15,080,000 acres. Production at least up to indicated acreage urged especially in areas not adapted to soybeans and corn.

RYE:

101

An estimate of 3,550,000 acres for harvest as compared with 3.5 million acres both in September and in 1941.

SUGAR

SUGARCANE:

No limitations on plantings; no acreage restrictions: production up to processing capacity urged.

SUGAR BEETS:

No limitations on plantings; no acreage restrictions: production up to processing capacity urged.

FEEDS

CORN:

108

92½-95 million acres compared with 87½-90 million in September and plantings of 87.2 million acres in 1941. Loans at 85 percent of parity. No marketing quotas. Allotment increased 10 percent in commercial area.

HAY:

100

An estimate of 72 million acres as compared with 74-75 million in September, and 71,893,000 acres in 1941. Producers urged to harvest all available hay crops, as well as to take best care of pasture land.

OATS & BARLEY:

See above under "CEREALS."

Percentage of 1941
production

WHEAT:

88

See above under "CEREALS."

GRAIN SOYBEANS:

106

An estimated 10 million acres as compared with September estimate of 9,775,000 acres and an actual 9,797,000 acres in 1941.

COVER-CROP AND HAY-CROP SEED

COVER-CROP SEED:

157

415,000 acres as in September goal and as compared with 265,000 acres in 1941.

HAY-CROP SEED:

125

An estimate of 4,919,000 acres compared with 3,923,000 in 1941. Harvesting of all available seed urged.

NONFOOD CROPS

COTTON:

108

25 million acres as compared with 22-24 million acres in September and plantings of 27½ million acres in 1941. Loans at 85 percent of parity. To encourage the production of long-staple cotton premiums will be paid on staples of 1-1/8 inch or longer.

TOBACCO:

Flue-Cured:

115

All goals higher than September except for cigar-wrapper type; loans at 85 percent of parity. No increases in AAA allotments required; flue-cured allotments increased 10 percent in December 1941.

Burley:

107

643,000 acres; September 762,000, and 1941, 732,000 acres.

Other:

104

383,000 acres; September 358,000, and 1941, 357,000 acres. 272,000 acres; September 247,000, and 1941, 261,000 acres.

WOOL:

105

51,200,000 sheep to be shorn, same as September estimate; 1941, 48,900,000. Yield should be 490,000,000 pounds of wool.

PURPENTINE:

158

450,000 barrels as compared with 400,000 in September and 285,000 produced in 1941. Maximum production desired within limitations of good management.

ROSIN:

158

1½ million barrels as compared with a September estimate of 1,733,000, and 950,000 produced in 1941. Maximum production desired within limitations of good management.

Percentage of
1941 production

<u>LUMBER:</u>	103	An estimate of 33.6 million board feet as compared with a 1941 production of 32½ million board feet.
<u>PULP WOOD:</u>	100	An estimate of 14.3 million cords as in 1941. Maximum production desired within limitations of good forest management.

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Food For Freedom Program
Background Information Series - No. 1 (Revised Feb. 6, 1942)

INFORMATION ON 1942 PRODUCTION GOALS, ARRANGED BY CLASSES OF COMMODITIES

(The original Food for Freedom agricultural production goals for 1942 were announced September 8, 1941; the goals as revised after Pearl Harbor were announced January 16, 1942. "September goal" refers to the former. The goals provide for acreages of individual crops and numbers of individual classes of livestock. In some cases special encouragement is provided through price support; in others the supply in 1942 is likely to be adequate for needs and the goal is a statement of the expected acreage or production. The following tabulation shows how the 1942 goals compare with the actual acreage or production in 1941, as estimated on February 5, 1942, and presents a few pertinent facts about the goal or estimate for each commodity.)

OVER-ALL: The new 1942 production goals represent 119 percent of average annual farm production in the 1935-1939 period or, with cotton, wheat, and tobacco omitted, 125 percent; production in the all-time-high year of 1941 was 113 and 116 percent, respectively, of average annual production in the 1935-39 period.

DAIRY PRODUCTS

Percentage of 1941
Acreage or Production ^{1/}

MILK: 108 125 billion pounds, same as September goal; 115,770,000 pounds produced in 1941. To stimulate production of cheese, evaporated milk, and dried milk, prices of these commodities are supported at 85 percent parity. Capacity production needed.

EGGS

EGGS: 113 4.2 billion dozen compared with 4 billion dozen in September goal and a 1941 production of 3,728,000 dozen. Price support at 85 percent of parity. Figures include nonfarm production estimated at 10 percent of farm production.

MEATS

HOGS: 114 Slaughter of 83 million head compared with 79.3 million head in September goal and a 1941 slaughter of 72½ million head. Price support at 85 percent of parity. Lard: An increase of 300 million pounds in 1942 by raising the yield of lard from hogs slaughtered and changing relationship between lard and meat prices. Increase in hog numbers is keeping pace with the increase in demand.

1/ Estimated as of Feb. 5, 1942.

Percentage of 1941
Acreage or Production

BEEF:
(cattle & calves)

108

Slaughter of 28 million head, the same as estimated in September, compared with a 1941 slaughter of 25,905,000. Marketings equal to estimated increases in numbers on farms are recommended to stabilize numbers and to increase the supply of meat.

SHEEP:
(and lambs)

101

Slaughter of 22.9 million sheep and lambs, the same as estimated in September, compared with a 1941 slaughter of 22,630,000.

CHICKENS:

110

Slaughter of 644 million, the same goal as in September, as compared with 585 million in 1941. Price support at 85 percent of parity does not include broilers. Adequate increase in chickens will automatically accompany an increase in numbers for egg production.

TURKEYS:

110

Slaughter of 35 3/4 million, estimated, as compared with 32 1/2 million in 1941.

FATS AND OILS

PEANUTS:

255

5 million acres compared with 3 1/2 million-acre September goal and a 1941 production of 1,964,000 acres. Price support on nuts for oil at 85 percent of the comparable price at beginning of the marketing year, August 1; but not less than \$82 per ton for U.S. No.1 Spanish type, \$78 for No.1 Runner type, and \$70 for Class A Virginia type, delivered to an approved local receiving agency. Present commodity loan on edible nuts at 85 percent of parity continued. All-out production of peanuts for oil needed.

SOYBEANS:

154

9 million acres compared with 7 million-acre September goal and with 5,855,000 acres in 1941. Price support at 85 percent of the comparable price at beginning of the marketing year, October 1; but not less than \$1.60 per bushel, farm basis, for U.S. No.2 Yellow of recognized varieties of high oil content as designated by State agricultural experiment stations, with approval of the war Boards. Price support applies to soybeans for oil only. All-out production needed.

FLAXSEED:

134

4 1/2 million acres compared with both a September goal and 1941 seedings of 3,367,000 acres. Price support at 85 percent of the parity price at beginning of the marketing year, June 1, but not less than \$2.15 per bushel, farm basis. Loans averaging at least \$2.10 per bushel, farm basis -- with local and grade differentials.

Percentage of 1941
Acreage or Production

CANNED VEGETABLES

CANNING PEAS:

132

38 million cases as compared with 28.7 million in 1941; goal set up December 19, 1942. U.S.D.A. obligates itself to buy all quantities of 1942 canned peas offered to it by certified canners through October 31, 1942, at base prices of \$1.10 per dozen No. 2 cans, Alaska or Sweet, f.o.b. cannery, U.S. Grade C, with price differentials for other grades. Canners must pay growers prices recommended by the War Boards in order to be certified by the Boards for sales to the U.S.D.A. Minimum prices paid to growers by canners must be not less than \$17.50 a ton more than the average prices paid in the same region in 1940. Production up to the limit of processing capacity desired.

CANNING TOMATOES:

127

40 million cases as compared with 31,430,000 in 1941; goal set up December 19, 1942. U.S.D.A. obligates itself to buy all quantities of 1942 canned tomatoes offered to it by certified canners through December 31, 1942, at base prices of 95 cents per dozen No. 2 cans, f.o.b. cannery, U.S. Grade C, with price differentials for other grades. Canners must pay growers prices recommended by the War Boards in order to be certified by the Boards for sales to the U.S.D.A. Minimum prices paid to growers by canners must be not less than \$5 a ton more than the average prices paid in the same region in 1940. The \$5 minimum price increase is also recommended paid for tomatoes for tomato products though the U.S.D.A. contemplates no purchases of such products. Production up to the limit of processing capacity desired.

OTHER CANNED
VEGETABLES:

100

Canned vegetables other than peas and tomatoes should attain at least the same pack as in 1941. As a whole a canned vegetable pack 45 percent above the annual average 1936-40, or an increase of one-fifth over 1941, is the goal, but the main increase is in peas and tomatoes. Peas, tomatoes, corn, and snap beans constitute four-fifths of the pack ordinarily. We should have in 1942 about 22 million cases more of canned fruit and vegetables than in 1941; 5 million cases more for fruit; 17 for vegetables.

MARKET-GARDEN AND COMMERCIAL TRUCK VEGETABLES

MARKET GARDEN:

101

An estimated 1,075,000 acres, the same as that in September, as compared with an actual 1,065,000 acres in 1941. Producers can expect increased demand.

COMMERCIAL TRUCK:

110

An estimated 1,840,000 acres as compared with the September estimate of 1,785,000 acres and an actual 1,680,000 acres in 1941. Producers can expect increased demand.

SEP 19 1942

Percentage of 1941
Acreage or Production

DRIED VEGETABLES

DRY BEANS:

113

2,600,000 acres as compared with 2,304,000 acres both in September and in 1941. Price support for White, Pink, Pinto, Medium White, Pea Beans, Great Northern, and California Small White, at 85 percent of the parity price at beginning of the marketing year, September 1, but not less than \$4.75 per hundredweight for U.S. No. 1 and \$4.60 for No. 2 in bags, f.o.b. cars, at country shipping points. All-out production desired of varieties for which price support is given.

DRY FIELD PEAS:

173

665,000 acres as compared with 324,000 in 1941; no September goal. Price support for Alaska, Blue Bell, First and Best, White Canada, Alderman, Perfection, Surprise, Thomas Laxton, at 85 percent of the comparable price at beginning of the marketing year, August 1, but not less than \$5.25 per hundredweight for U.S. No. 1 and \$5 for No. 2, in bags, f.o.b. cars at country shipping points. All-out production desired of varieties for which price support is given.

POTATOES

POTATOES:

110

An estimated 3,060,000 acres, as in September, compared with a 1941 planting of 2,793,000 acres. Price-support program to be announced.

SWEET POTATOES:

101

An estimated 850,000 acres as compared with 1941 plantings of 843,000.

FRESH AND DRIED FRUIT

FRESH FRUIT:

100

The same total production as in 1941, but less waste and more efficient marketing and distribution; 15,018,000 tons, of which 2,200,000 tons would go into dried fruit and 3,360,000 tons into canning and other preserving uses.

DRIED FRUIT:

119

An estimated production of 100,000 tons more than in 1941; a pack of 604,000 tons compared with a September goal of 625,000 and a pack of 507,000 tons in 1941.

FARM AND HOME GARDENS

GARDENS: 120 A goal, as in September, of 5,760,000 farm gardens compared with only 4,800,000 in 1941. Emphasis is placed only upon the making of farm, community, and school gardens where soil is good, supervision is competent, and wastage of scarce materials and equipment, as well as labor, will be avoided. There should be no all-out effort to make city and town gardens, or to plow up grass plots, lawns, parks, golf courses, playgrounds, or even ornamental gardens. Objective of the gardens: To enrich the diet of Americans and provide them better nourishment. Food should, so far as possible, be consumed when ready to eat near where grown so as to avoid processing, packaging, and transportation.

CEREALS

WHEAT: 88 55 million acres compared with 50-55 million acres in the September goal, and with 62.4 million planted in 1941. Wheat will be released from storage stocks for feeding at prices comparable with corn, in addition to the normal feeding of 100 million bushels, in order to expand feed supplies in areas not adapted to corn and also to provide storage space for the 1942 crop. Loans at 85 percent of parity.

RICE: 106 1,320,000 acres compared with September goal of 1,200,000 acres and plantings of 1,245,000 in 1941. Production should be at least 5 million bushels more than in 1941. Loans at 85 percent of parity.

OATS: 102 An estimate of 40 million acres as in September; 39,363,000 acres in 1941. Production at least up to normal acreage urged, especially in areas not adapted to soybeans and corn.

BARLEY: 106 An estimate of 16 million acres; September estimate about 14,375,000 acres; 1941 plantings 15,080,000 acres. Production at least up to indicated acreage desirable especially in areas not adapted to soybeans and corn.

RYE: 101 An estimate of 3,550,000 acres for harvest as compared with 3.5 million acres both in September and in 1941.

Percentage of 1941
Acreage or Production

SUGAR

SUGARCANE:

No limitations on plantings; no acreage restrictions; production up to processing capacity urged.

SUGAR BEETS:

No limitations on plantings; no acreage restrictions; production up to processing capacity urged.

FEEDS

CORN: 108

92½-95 million acres compared with 87½-90 million in September and plantings of 87.2 million acres in 1941. Loans at 85 percent of parity. No marketing quotas. Allotment increased 10 percent in commercial area.

HAY: 100

An estimate of 72 million acres as compared with 74-75 million in September, and 71,893,000 acres in 1941. Producers urged to harvest all available hay crops, as well as to take best care of pasture land.

OATS & BARLEY:

See above under "CEREALS."

WHEAT: 88

See above under "CEREALS."

GRAIN SORGHUM: 106

An estimated 10 million acres as compared with September estimate of 9,375,000 acres and an actual 9,397,000 acres in 1941.

COVER-CROP AND HAY-CROP SEED

COVER-CROP SEED: 157

415,000 acres as in September goal and as compared with 265,000 acres in 1941.

HAY-CROP SEED: 125

An estimate of 4,919,000 acres compared with 3,923,000 in 1941. Harvesting of all **available seed** urged.

NONFOOD CROPS

COTTON: 108

Allotments same as in 1941; plantings estimated to be 25 million as compared with 22-24 million in September and 23½ million acres in 1941. Loans at 85 percent of parity. To encourage the production of long-staple cotton premiums will be paid on staples of 1-1/8 inch or longer.

Percentage of 1941
Acreage or Production

TOBACCO:

All goals higher than September except for cigar-wrapper type; loans at 85 percent of parity. No increases in AAA allotments required; flue-cured allotments increased 10 percent in December 1941.

Flue-Cured:

115

843,000 acres; September 762,000, and 1941, 732,000 acres.

Burley:

107

383,000 acres; September 350,000, and 1941, 357,000 acres.

Other:

104

272,000 acres; September 247,000, and 1941, 261,000 acres.

WOOL:

105

An estimate of 51,200,000 sheep to be shorn, same as September estimate; 1941, 48,900,000. Yield should be 490,000,000 pounds of wool. Efficient shearing of all wool possible is desired.

TURPENTINE:

158

450,000 barrels as compared with 400,000 in September and 285,000 produced in 1941. Maximum production desired within limitations of good management.

ROSIN:

158

1½ million barrels as compared with a September estimate of 1,333,000, and 950,000 produced in 1941. Maximum production desired within limitations of good management.

LUMBER:

103

An estimate of 33.6 million board feet as compared with a 1941 production of 32½ million board feet.

PULP WOOD:

100

An estimate of 14.3 million cords as in 1941. Maximum production desired within limitations of good forest management.

UNITED STATES DEPARTMENT OF AGRICULTURE
Washington, D. C.

Food for Freedom Program
Background Information Series No. 1 -- Revised December 23, 1942

INFORMATION ON THE 1943 PRODUCTION GOALS, ARRANGED BY CLASSES OF COMMODITIES

Aided by good weather farm families planted, tilled, and harvested during 1942 a total crop one-fourth larger than the 1935-39 average. Goals for 1943 call for a total volume of production slightly larger still. However, if yields per acre drop back to normal, actual crop production would be less than 90 percent as large as the bumper crop of 1942, but livestock production would be 10 percent higher. The exceptionally large food supply from 1942 production makes the latter possible. Insofar as possible the Department of Agriculture will endeavor generally to support prices for dairy and poultry products, meat animals, and food crops essential for domestic consumption and foreign shipment at levels that will assure producers sufficiently attractive returns to do the job. This policy will be carried out through specific loan, purchase, and other programs mentioned below or to be announced later as needed. The Department will also endeavor to maintain feed prices, especially corn, feed wheat, and oil meal, at 1942 levels. The following tabulation compares 1943 goals with 1942 goals and 1942 performance.

COMMODITY	Increase or decrease in 1943 goal as compared with--	
	1942 goal	1942 reported production acres or numbers

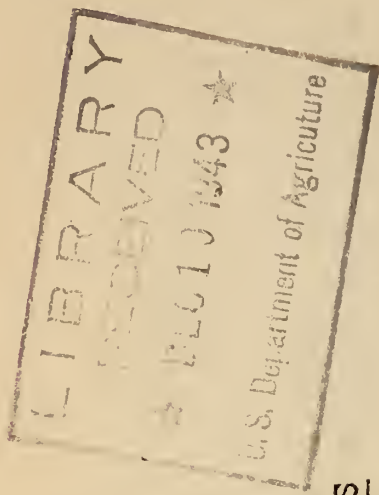
Quantities involved, price supports, loans, civilian supply, etc.

Percent Percent Percent

MEAT AND LARD

Meat - Total

Preliminary data indicate 1942 production of beef, veal, lamb, mutton, and pork, may reach 22 billion pounds, 29% more than the average for the 1936-40 period. But 86% of the increased production is earmarked for military or lend-lease use. The 1943 goal calls for 25.7 billion pounds of meat or 50% more than average 1936-40 production. Next year military and lend-lease requirements will be greater than in 1942. Civilians will not therefore get as much meat as they would like to buy.



<u>Hogs</u>	+20	+25	The 1943 goal calls for slaughter of 100 million hogs as compared with the goal of 83 million in 1942 and reported slaughter of 80 million. Price support at not less than \$13.25 a hundredweight (average) for Good to Choice butcher hogs weighing 240-270 lb., Chicago.
<u>Slaughter-</u> <u>ed</u>			
<u>Pork</u>	+20	+25	Achievement of the slaughter goal should produce 13.8 billion pounds of pork, compared with expected 1942 production of 10.8 billion pounds. But 1943 military and lend-lease requirements will exceed those of 1942 by 1½ billion pounds. Supplies for civilian consumption will be less than in 1941, about what they had in 1936-40, but at least 10-12 lb. less than they would like to buy in 1943 at ceiling prices.
<u>Lard</u>	+21	+36	Achievement of the hog-slaughter goal should result in the production of 3.4 billion pounds of lard in 1943, as compared with the 1942 goal of 2,820,000,000 pounds and an expected production of 2.5 billion pounds. Military and lend-lease needs for lard will be slightly higher in 1943 than in 1942. Civilian consumption may be a little larger than the 1936-40 average but smaller than the record consumption in 1940 and 1941.
<u>Cattle and</u> <u>Calves</u>	+8	+9	The 1943 goal calls for slaughter of 30.4 million head (20.1 million cattle and 10.3 million calves) as compared with a goal of 28 million head and an anticipated slaughter of 27.8 million head in 1942. Some reduction in cattle numbers would occur but not enough to jeopardize a high production level in 1944 and thereafter.
<u>Slaughter-</u> <u>ed</u>			
<u>Beef and</u> <u>Veal</u>	+14	+7	Achievement of the goal should produce 9,780 million pounds of beef and 1,130 million pounds of veal, a total of 10,910 million pounds, as compared with a total 1942 goal of 9,585 million pounds and an anticipated 1942 production of 10,160 million pounds. Military and lend-lease requirements for 1943 will exceed those of 1942 by 1,300 million pounds. Hence 1943 civilian consumption has been scaled slightly below that for 1941 and 550,000,000 pounds below that expected in 1942.

Sheep and
Lambs
Slaughtered

+5

The 1943 goal calls for slaughter of 24.1 million animals as compared with a goal of 22.9 million and an anticipated slaughter of 24.6 million in 1942. While the total number on farms is unusually high, achievement of the goal will require some reduction.

Lamb and
Mutton

+5

Achievement of the 1943 goal should produce 990 million pounds of lamb and mutton. Military, lend-lease, and commercial export requirements will be 90 million pounds more in 1943 than in 1942

POULTRY

Chicken
(Dressed)

+28 +28

The 1943 goal calls for production of 4 billion pounds of dressed chicken as compared with a goal and an anticipated production of 3,118 million pounds in 1942. Goal achievement will require a 10% increase in farm chickens raised for flock replacement, and the farm raising of an additional 125 million young chickens. Commercial broiler production should be increased from 200 in 1942 to 275 million birds. Price support for chickens, exclusive of broilers and of those of less than 3 pounds live weight, at 90% of the parity price.

Turkey

+12 +15

The 1943 goal calls for production of 560 million pounds of dressed turkey as compared with a goal of 500 million pounds and an anticipated production of 485 million pounds in 1942. Prospective prices favor this increase. Price support at 90% of parity price.

EGGS AND LAYING HENS

Eggs

+14 +8

The 1943 goal calls for 4,780 million dozen eggs as compared with a goal of 4,200 million dozen and an anticipated production of 4,414 million dozen in 1942. Of these the equivalent of at least 1,220 million dozen must be dried for military and lend-lease use. The eggs available for civilian consumption may be less than in 1942. Price support at 90% of parity price, but in no event less than a U. S. average farm price of 30 cents a dozen in spring and early summer, and an annual U. S. farm price average of 34 cents per dozen for the year.

Laying Hens +7

+7

The 1943 goal is 455 million laying hens as compared with a goal of 425,230,000 and 425,238,000 reported in 1942.

MILK AND MILK COWS

Milk

-2

+2

The 1943 goal calls for milk production of 122 billion pounds as compared with a goal of 125 billion pounds in 1942. Production in 1942 estimated at 120 billion pounds. Scarcity of dairy labor and slaughter of dairy cows is tending to reduce production. Some 140 billion pounds of milk would be needed to meet all 1943 requirements. Such production cannot be attained. Price support at 90% of the parity price equivalent for butter, cheese, dry skim, and evaporated milk, but not less than 46 cents per pound for 92-score butter, Chicago basis; 12.5 cents per pound for roller- and 14.5 cents for spray-process dry skin, extra grade Midwest basis; and a comparable price for evaporated milk, f.o.b. plant basis, to be announced. A subsidy will be paid on all cheese. It will be 3 3/4 cents - except for low-moisture-content, which will be 4 cents, bringing the support to 27 cents on standard-moisture and 27 1/4 cents on low-moisture-content cheese.

Milk Cows

+2

+2

The 1943 goal calls for 25,720,000 milk cows as compared with a goal and a reported number of 25,200,000 in 1942. Achievement of this goal is anticipated.

OIL CROPS

Soybean
Acreage

+17

-2

The 1943 goal calls for 10.5 million acres harvested for beans as compared with a goal of 9 million acres and 10.8 million acres reported in 1942.

Soybean
Production

+23

-10

The 1943 goal calls for production of 189 million bushels as compared with a goal of 153 million bushels and an expected production of 209,559,000 bushels in 1942. If 30 million bushels are used for seed, 159 million bushels would be available for crushing to produce 1,430 million pounds of oil. Price support on soybeans for oil at 90% of the comparable price calculated as of the beginning of the marketing year, October 1, but not less than \$1.60 to \$1.75 per bushel, depending on oil content, U.S. average farm price, for Yellow and Green soybeans of high oil content.

<u>Peanut</u>	+10	+49	The 1943 goal calls for 5.5 million acres picked and threshed as compared with a goal of 5 million and 3,690,000 acres reported in 1942
<u>Acreage</u>			
<u>Peanut</u>	*1	+33	The 1943 goal calls for the production of 3,712,500,000 pounds as compared with a goal of 3,750,000,000 pounds and an expected production of 2,504,440,000 pounds in 1942. Approximately 1,450 million pounds would be required for the edible peanut trade, seed, and local uses, leaving 2,262 million pounds for crushing. The Department recommends a single price program for all peanuts such as to assure growers of 80-85% of the parity price. This program would require new legislation. If this proves impossible the 1942 price-support device will be used which supported prices on peanuts for oil at not less than 90% of comparable prices and guaranteed certain minimum prices per ton; commodity loans or price support programs at 90% of parity were also available.
<u>Production</u>			
<u>Flaxseed</u>	+11	+7	The 1943 goal calls for 5 million acres of flaxseed as compared with a goal of 4.5 million acres and 4,691,000 acres reported in 1942.
<u>Acreage</u>			
<u>Flaxseed</u>	+1	-11	The 1943 goal calls for the production of 36,250,000 bushels as compared with a goal of 36 million bushels and an expected production of 40,660,000 bushels in 1942. Maximum requirements for linseed oil are 800 million pounds which would require 42 million bushels of flaxseed. We must depend on imports and stocks for our additional needs. Price support for flaxseed for oil at 90% of parity calculated at the beginning of the marketing year, June 1, but not less than \$2.70 per bushel, basis No. 1 flaxseed at Minneapolis.
<u>Production</u>			
<u>Commercial</u>	-6	+2	The 1943 goal calls for 1,720,000 acres as compared with a goal of 1,840,000 and 1,692,000 acres reported in 1942. This comprises the 21 most important commercial vegetables, not including potatoes or sweet potatoes. Increases are suggested for carrots, kale, lima and snap beans, sweet corn, onions, cabbage, beets, and tomatoes; no change for peas, spinach, and asparagus; decreases for artichokes, peppers, lettuce, eggplant, watermelons, cauliflower, cantaloupes, cucumbers, and celery. Excluding watermelons and cantaloupes, the harvested acreage should be 2%
<u>Truck-Crop</u>			
<u>Acreage</u>			
<u>For Fresh</u>			
<u>Market</u>			

VEGETABLES

above that for 1942. Market gardens located near plants of consumption also occupy about a million acres; increases are stressed where possible. The importance of home vegetable gardening is greatly increased under present conditions.

Commercial -3 -7
Truck-Crop
Production

The 1943 goal calls for production of 6.7 million tons as compared with a goal of 5.9 million and an anticipated production of 7.2 million tons in 1942.

Potato +3 +13
Acres

The 1943 goal calls for production of 3,160,000 acres as compared with a goal of 3,060,000 acres and 2,793,000 acres reported as planted in 1942.

Potato +3 +5
Production

The 1943 goal calls for production of 390,600,000 bushels as compared with a 1942 goal of 384,000,000 bushels and an expected production of 371,150,000 bushels. The 1943 production, with imports of 700,000 bushels and stocks of 100 million bushels, would provide a total of 491,300,000 bushels. Estimated civilian requirements are 312,833,300 bushels, to which must be added a carry-over of 105,000,000; 49,167,000 for noncivilian use; and 65,000,000 bushels for seed, feed, and waste; -- a total of 532,000,300 bushels. This indicates a shortage, but the above estimate of civilian requirements includes more than the estimated civilian requirement for 1942. The 1942 requirement was about the same as the average amount civilians used for food in the period 1936-40. Price support at 90% of parity as of beginning of the marketing year, but not less than specified prices for certain grades in specified commercial areas which will be announced January 1, 1943.

Sweet potato -12 +7
Acres

The 1943 goal calls for 757,000 acres as compared to a goal of 850,000 acres and 707,000 acres harvested in 1942.

Sweet potato -10 -3
Production

The 1943 goal calls for the production of 63,361,000 bushels as compared with a goal of 70 million bushels and an expected production of 65,380,000 bushels in 1942. Requirements are estimated at 59,952,700 bushels for civilian consumption, 3,330,900 for noncivilian use, 9.5 million bushels for carry-over, and 11,885,400 bushels for seed, feed, and waste. Production in 1943, plus stocks of 9.4 million bushels, will fall short by 11,908,000 bushels of meeting this 84,669,000 bushel requirement. More careful handling of the crop is advised.

Canning
Vegetables

The size of the pack will depend upon restrictions placed on the use of tin for preserving food. A total pack not differing greatly from that in 1942 is anticipated, though much more will go for Lend-lease and the armed forces in 1943. The 1942 goal was 40 million cases of tomatoes of which 33 million were packed and 38 million cases of peas of which 35½ million were packed. The 1943 pack of beans, tomatoes, and tomato products, peas, and corn, should be as great as can be processed. Price support is to be announced for snap beans, corn, peas, tomatoes, beets, carrots, pumpkin, and squash for processing, and cabbage for kraut. The prices will be maintained as in 1942 through certification of canners who have agreed to pay not less than specified prices to growers.

+31

+8

Dry-Bean
Acreage

The 1943 goal calls for 2.8 million acres as compared with a goal of 2.6 million acres and 2,135,000 acres planted in 1942.

+11

+6

Dry-Bean
Production

The 1943 goal calls for production of 21,672,000 bags of 100 lb. each as compared with a 1942 goal of 20.4 million bags (uncleaned) and an estimated production of 19,608,000 bags in 1942. The following commercial classes of dry edible beans: Pea, Medium White, Great Northern, Small White, Flat Small White, Pink, Pinto, Small Red, Cranberry, Light Red Kidney, Dark Red Kidney, and Western Red Kidney - will be supported at 90% of parity calculated as of the beginning of the marketing year, September 1, but not less than \$5.35 per hundredweight for U.S. No. 1 beans and \$5.20 for U.S. No. 2, in bags, f.o.b. cars at country shipping points.

+25

Same

Dry-Pea
Acreage

The 1943 goal calls for 565,000 acres as compared with a goal of the same acreage in 1942, and 530,000 acres reported. Planting 246% above the average for 1936-40 and 25% above 1942 will be required to meet the goal.

-6

-15

Dry-Pea
Production

The 1943 goal calls for production of 6,078,000 bags as compared with a goal of 6,450,000 bags uncleaned, and expected production of 7,160,000 bags in 1942. Lend-lease and military requirements are expected to total 2,650,000 bags and civilian requirements 3 million. The following varietal types - Alaska, Bluebell, Scotch Green, First and Best, and White Canada - will have price support at 90% of the comparable price calculated as of the beginning of the marketing year, August 1, but not less than \$5.25 per hundredweight for U.S. No. 1 and \$5. per hundredweight for U.S. No. 2, in bags, f.o.b. cars at country shipping points. Prices for wrinkled varietal types will not be supported.

FRUITS

Fruit -3 -1

The 1943 goal calls for the production of 14,610,000 tons of fruit (on the basis of fresh equivalent) as compared with a goal of 15,018,000 tons and an expected production of 14,718,000 tons in 1942. This means production of the 11 major crops at about the 1941-42 level, that of deciduous fruits and grapes approximating the 1936-41 average, and of the citrus fruits exceeding that average by about one-fifth.

Dried Fruit

Prunes and raisins constitute 80% of the 560,000-ton total average pack in 1942; supplies will meet government requirements, but fall short of filling civilian demand. Maximum drying of fruit is encouraged by price support. All demands will probably increase -- civilian, lend-lease, and military. A series of specific support prices will be worked out and announced about February 1, 1943, for dried apples, apricots, peaches, pears, prunes, and raisins.

Canned Fruits

Estimated 1942-43 pack of fruits and fruit juices is 86 million cases of which about one-fourth will go for military and lend-lease uses, leaving less available for civilians than they would like to buy. Canning of some fruits in 1943 will be confined to Government needs. If shipments of canned pineapple and pineapple juice to this country are maintained, and if all fruit that cannot be used in other forms is canned, the total 1943-44 pack should leave for civilians 60% of the average quantity used during the past five seasons.

SUGAR

<u>Sugarcane</u> <u>Acreage</u>	+3	+3	The 1943 goal calls for 340,000 acres of cane as compared with 329,000 acres in 1942. harvested for sugar and seed. This acreage should utilize all available processing capacity.
<u>Sugar-Beet</u> <u>Acreage</u>	Same	Same	The 1943 goal calls for 1,050,000 acres, or virtually the same as the 1,049,000 acres planted in 1942. This relatively large production in continental United States is desirable in order that consumers may be assured of a reasonable amount of sugar at a time when sugar shipments from the domestic and foreign offshore areas are uncertain.

CEREALS

<u>Wheat</u> <u>Acreage</u>	-5	Same	The 1943 goal calls for 52.5 million acres seeded as compared with a goal of 55 million and 52,533,000 acres reported in 1942. It is hoped that flax, small feed grains, grain sorghum, and seed peas will be sufficiently attractive as a source of income to growers to keep 1943 wheat acreage in line with the goal.
<u>Wheat</u> <u>Production</u>	-18	-34	The 1943 goal calls for a production of 651 million bushels as compared with a goal of 793 million bushels and an expected production of 981,327,000 bushels in 1942. The carry-over from the 1942 crop was 800 million bushels. This should provide all needs and allow for the use of 250 million bushels as feed, industrially, or for shipment to our Allies, if permitted. The Agricultural Adjustment Act of 1938 as amended, provides for loans to eligible producers at 85 to 90% of the parity price on the 15th of the month preceding the beginning of the marketing year, provided producers approve marketing quotas.
<u>Rye</u> <u>Acreage</u>	+1	-6	The 1943 goal calls for 3.6 million acres harvested as compared with a goal of 3,550,000 and 3,837,000 acres reported in 1942.

<u>Rye</u>	-17	-30	
<u>Production</u>			
<p>The 1943 goal calls for production of 40 million bushels as compared with a 1942 goal of 48 million and an estimated production of 57,341,000 bushels. Production goals are less significant than for other crops because much rye is planted for pasture. With estimated stocks of 50 million bushels on July 1, 1943, and the possibility that we may import 15 million from Canada, the supply will be ample. There should be a considerable carry-over also for livestock feed or war relief.</p>			
<u>Rice</u>	+5	-7	
<u>Acreage</u>			
<p>The 1943 goal calls for 1,380,000 acres as compared with a goal of 1,320,000 and 1,477,000 acres harvested in 1942. The goal was reduced because of the difficulty of getting equipment and material to bring more land into production, because the land suited to rice is limited, and because some acreage used for it in 1942 will not be available in 1943.</p>			
<u>Rice</u>	+3	+1	
<u>Production</u>			
<p>The 1943 goal calls for production of 66.8 million bushels as compared with a goal of 65 million and an expected production of 66,353,000 bushels in 1942. Production about equals processing capacity. The 1942 crop will increase our stocks from 1 1/2 million bushels to 6.5 million. We can easily maintain both lend-lease exports and stocks if the goal is met. The Agricultural Adjustment Act of 1938, as amended, provides for loans to eligible producers at 90 percent of parity on the 15th of the month preceding the beginning of the marketing year, provided producers approve marketing quotas.</p>			

FEED GRAINS

<u>Corn</u> <u>Acreage</u>	+2	+4	The 1943 goal calls for 95 million acres as compared with a goal of 93,750,000 and 91,011,000 acres planted in 1942. Increase is needed to ensure sufficient livestock feed.
<u>Corn</u> <u>Production</u>	+6	-11	The 1943 goal calls for production of 2,834 million bushels as compared with a goal of 2,675 million bushels and an estimated production of 3,175,154,000 bushels in 1942. The Agricultural Adjustment Act of 1938, as amended, provides for loans to eligible producers at 85-90 percent of parity on the 15th of the month preceding the beginning of the marketing year, provided producers approve marketing quotas.
<u>Oat</u> <u>Acreage</u>	-7	-13	The 1943 goal calls for 37.3 million acres as compared with a goal of 40 million and 42,656,000 acres seeded in 1942.
<u>Oat</u> <u>Production</u>	-5	-16	The 1943 goal calls for production of 1,137,650,000 bushels as compared with a goal of 1.2 billion bushels and an estimated production of 1,358,730,000 bushels in 1942. Acreage reduction is hoped for to expand production of corn and certain other crops.
<u>Barley</u> <u>Acreage</u>	+12	-7	The 1943 goal is 18 million acres as compared with a goal of 16 million and 19,433,000 acres seeded in 1942.
<u>Barley</u> <u>Production</u>	+9	-8	The 1943 goal calls for production of 392 million bushels as compared with a goal of 360 million and an expected production of 426,150,000 bushels in 1942. Loans at rates slightly higher than in 1942.
<u>Grain</u> <u>Sorghum</u> <u>Acreage</u>	Same	+3	The 1943 goal calls for 10 million acres as did the 1942 goal; 9,755,000 acres were planted in 1942. Increase is needed to ensure sufficient livestock feed.
<u>Grain</u> <u>Sorghum</u> <u>Production</u>	+6	+18	The 1943 goal calls for production of 127 million bushels as compared with a goal of 120 million and an estimated production of 107,245,000 in 1942. Loans at rates slightly higher than in 1942.

HAY

Hay (Harvested Acres)	-1	-2	The 1943 goal calls for 71.1 million acres as compared with a goal of 72 million and 72,744,000 acres harvested in 1942.
Hay Production	Same	-10	The 1943 goal calls for production of 94.5 million tons as compared with a goal of 94 million and an estimated production of 105,328,000 tons in 1942. Total requirements for 1943 may be 100 million tons but we have ample stocks. Some Corn Belt sod acreage may have to be diverted from hay to pasture because of large reductions in rotation pasture acreage in 1942.
Hay Crop Seed Acreage	-4	+39	The 1943 goal calls for 4,709,000 acres of hay-crop seed as compared with a goal of 4,919,000 and 3,392,000 acres reported in 1942. Consideration is being given to development of price supports for cover-crop and hay-crop seed, announcement to be made later if decision is favorable.

NONFOOD CROPS

Cotton Acreage	-10	-3	The 1943 goal is 22.5 million acres as compared with a goal of 25 million and 23,310,000 acres planted in 1942. It is important, however, that production of longer-staple cotton be expanded. Farmers should shift acreage from short-staple, which is in large supply. The Army and Navy have recommended that acreage of S X P American-Egyptian type be increased to 250,000, considerably more than the 1942 acreage. The goal for Sea Island is 10,000 acres, approximately the same as in 1942.
Cotton Production	-6	-13	The 1943 goal calls for production of 11,3 million 500-pound bales as compared with a goal of 12 million and 12,982,000 bales produced in 1942. Requirements seem likely to be 13-13.5 million bales. The AA Act of 1938, as amended, makes loans available to eligible producers at 90% of parity on the 15th of the month preceding the beginning of the marketing year, since producers have approved marketing quotas. Price support will be provided for the crop of American-Egyptian cotton at 90% of parity calculated at beginning of the marketing year, August 1, but not less than 45 cents a pound for No. 2 1 1/2-inch staple, or a price which bears the same relationship to the loan rate in Arizona for 1-1/16-inch Midland Upland Cotton as the support price for American-Egyptian Cotton bore to the loan rate for such Upland cotton in 1942. CCC has not as yet announced a program on American-Egyptian to be produced in 1943.

<u>Flue-cured Tobacco Acreage</u>	Same	+6	The goal is 841,000 acres, the same as the goal in 1942 when 792,000 acres were harvested.
<u>Flue-cured Tobacco Production</u>	Same	-9	The goal is a production of 750 million pounds as in 1942 when 824,115,000 pounds were produced. The Agricultural Adjustment Act of 1938, as amended, makes loans available to eligible producers at 90% of parity on the 15th of the month preceding the beginning of the marketing year, providing producers approve marketing quotas.
<u>Burley Tobacco Acreage</u>	+10	+20	The 1943 goal calls for 421,000 acres as compared with a goal of 383,000 and 351,000 acres harvested in 1942.
<u>Burley Tobacco Production</u>	+10	+16	The 1943 goal calls for production of 385 million pounds as compared with a goal of 350 million pounds and an expected production of 331,005,000 pounds in 1942. Loans available as for flue-cured.
<u>Other Domestic Tobacco Acreage</u>	Same	+15	The 1943 goal calls for 272,000 acres as in 1942 when 237,000 acres were harvested.
<u>Other Domestic Tobacco Production</u>	Same	+9	The 1943 goal calls for production of 286 million pounds as in 1942 when it is expected that 262,068,000 pounds will be produced. Loans available as for flue-cured.
<u>Hemp for Fiber</u>			To relieve the threatened shortage of rope and twine for military purposes and essential civilian use the 1943 hemp program calls for 300,000 acres for fiber and 50,000 acres for seed, a twenty-fold increase over 1942 in the former and an increase of one-third in the latter. Governmental financing of hemp-processing mills is included in the program. Hemp straw will be purchased at from \$30 to \$50 a ton, depending on grade, for the 1943 crop.

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MORE FATS AND OILS - A VITAL NEED

Not counting petroleum oil and essential oils used in perfumes, there are about 30 fats and oils which form an important part of our peacetime life and are grim necessities in war. War in the Pacific has jeopardized two-thirds of the 15 percent of these fats and oils we normally import.

Fats and oils are necessary for food, for soap, for paints, varnishes, linoleum, and printers' ink, for industrial lubricants, and in the manufacture of metals, textiles, leather goods, and glycerine. In times of peace glycerine, required in the making of nitroglycerine and other explosives, is a byproduct of soap making, but in time of war soap rather becomes a byproduct of glycerine manufacture.

Edible fats are highly important foods in wartime because their outstanding caloric value makes them especially needful for the armed forces and for civilians working longer hours and under increased strain. The paint and varnish oils are used increasingly for the protective coating of ships, tanks, guns, planes, cantonments, and so on. Special lubricants are required more than usual for high-speed motors and metal-turning lathes. Others of the United Nations require oil for food, soap making, glycerine manufacture, and lubricants.

In 1940 we used about 10 billion pounds of fats and oils of which approximately 6-1/2 billion pounds went into edible products, 2 billion were made into soap, 1 billion into paints, varnishes, printing inks, and linoleum products, and 0.5 billion was used for a variety of industrial purposes. Of the 10 billion pounds of oils and fats we imported 1-1/2 billions from the Philippines, Africa, Argentina, Brazil, the Dutch East Indies, and Malaya.

We normally produce domestically such food fats as we need and export, but domestic production is a third short of supplying all the fats and oils we need for soap, slightly more than a third short of those necessary industrially, and half short of our paint and varnish needs. Curtailment of our Far Eastern imports will directly affect the soap and glycerine, tin-plate, and textile industries, and will necessitate changes in composition among our manufactured fats and oils products.

Domestic production must be increased to prevent shortages. Imports are reduced both as a result of war with Japan and of shipping shortages. Prices for all fats and oils are higher and consumption is smashing all records and is still increasing. Stocks are being depleted by rising demand. The revised farm-production goals announced January 16, 1942, call for greatly increased production of peanuts, soybeans, and flaxseed for oil.

The following balance sheet explains why the revised 1942 goals look to the production of 600 million pounds of oil from peanuts, 350 million pounds from soybeans, and 100 million pounds from flaxseed more than in 1941-42. Only thus can we prevent a threatened fats and oils deficit of a billion one hundred million pounds. Even a level of 1.6 billion pounds of factory and warehouse stocks during 1942-43 must be regarded as dangerously low. Adjustments will, of course, be required in industry to step up the use of soybean and peanut oils.

- The Balance Sheet -

The 1941-42 and 1942-43 balance sheets are estimated about as follows:

Billions of pounds in -			
	1941-42	1942-43	
Domestic disappearance	11.0	11.5	
Exports:			
Lend-Lease	0.5	0.8	
Commercial	0.2	0.2	
Total requirements	11.7	12.5	
		September 8, 1941, goals	Revised, January 16, 1942, goals
Production from domestic materials:	9.6	10.4	11.5
Imports	1.4	1.0	1.0
Total new supply	11.0	11.4	12.5
Deficit	0.7	1.1	0.0
Factory stocks	1.6	0.5	1.6

-- Oils and Their Uses --

The following fats and oils which are important articles of commerce in the United States are listed more or less in the order of their importance: Butter, lard, oleo oil, oleostearine, edible and inedible tallows, greases, fish and marine, babassu, castor, coconut, corn, cottonseed, linseed, olive, palm, palm-kernel, peanut, perilla, rape, sesame, soybean, and tung oils. Butter and lard production increased about 3 percent and 26 percent, respectively, in 1941 as compared with 1936-40, and these fats will not be discussed here in detail.

The oils and fats principally used in shortenings, for oleomargarine, and for other edible purposes are: Lard, butter, tallow, and palm-kernel, coconut, cottonseed, soybean, peanut, oleo, olive, babassu, and sesame oils. The oils principally used in making soap are: Tallow and greases, coconut oil, palm oil, and to a lesser extent palm-kernel, soybean, olive, babassu, linseed, castor, oleo, and fish oils. Oils widely used in making paint, varnish, linoleum, oil-cloth, and printers' ink are: Linseed, tung, perilla, castor, and to some extent soybean, rape, and certain fish oils. Both castor and rape oils are effective special lubricants.

-- The Import Situation --

In 1940-41, not shown in the tabulation above, we imported 1.6 billion pounds of fats and oils, including the oil contained in oilseeds, and more than half of these products originated in the Pacific area. The principal items imported from this area were coconut oil and copra, mostly from the Philippines, and palm oil, from the Netherlands Indies and Malaya. Imports of perilla and

of tung oils also originated in the Pacific; Japan controls the supplies of the former while the latter is a Chinese product. Alternative sources of supply for coconut oil and copra were the Netherlands East Indies, and various South Pacific Islands, as well as East Africa whence we may still derive some. In the past we have also obtained considerable quantities of palm oil from West Africa.

Substitutes for coconut oil are available in the form of babassu and other palm-kernel oils contained in the nuts of certain varieties of palm trees found in great profusion in tropical Latin America. But transport, labor, and equipment shortages preclude any rapid expansion of imports of palm-nut kernels to the United States. Fairly large quantities of palm-kernels are available in West Africa. Brazilian oiticica oil and dehydrated castor oil, derived largely from Brazilian castor beans, are already being used to supplement supplies of tung oil and perilla oil in the United States.

-- The Revised 1942 Oil-and-Fat-Crop Goals --

It is important therefore that the 1942 production goals for oil and fat crops be achieved if not surpassed. It is probably also that our remaining supplies of palm and coconut oil will be used in industrial rather than in edible products wherein they would be replaced by soybean and peanut oils. Linseed oil can also be used as a drying oil in part replacement for perilla and tung oils. Peanut and soybean oils can be used to replace coconut and palm oils in soap making, but with some difficulty; in edible products such replacement is possible without technical difficulties beyond the increased need for hydrogenation or hardening of the oils.

The goal of soybeans for oil has been raised to 54 percent above the acreage harvested in 1941, that of peanuts for oil to 155 percent, and of flaxseed 34 percent above 1941 levels. All-out production is needed.

There have been several changes made in the AAA farm program designed to increase the production of needed commodities. First of all, a new conservation approach was adopted in the 1942 program. Instead of limiting production to a maximum soil-depleting acreage on each farm, the program now encourages the maintenance of a minimum soil conserving acreage. Another amendment provides that full payment will be made on peanut acreage allotments only if at least 80 percent of the allotment is planted. Peanuts grown on allotment acreage may be used for food or oil. The increase in the peanut acreage goal above the present acreage allotments applies exclusively to peanuts to be crushed for oil.

-- Peanuts For Oil --

What does this mean in more detail? Take peanuts first: In 1941 we grew 1,964,000 acres of them. September 8, 1941, the 1942 goal was set at 3-1/2 million acres but in the post-Pearl Harbor revision announced January 16, 1942, the goal became 5 million acres. Price support was provided at 85 percent of the comparable price at the beginning of the marketing year, August 1, but such prices to be not less than \$82 per ton for U. S. No. 1 Spanish Type, \$78 for No. 1 Runner Type, and \$70 for Class A Virginia Type, delivered to an approved local receiving agency.

-- Soybeans For Oil --

Turning to soybeans: In 1941 plantings ran 5,855,000 acres; the September goal was 7 million acres but 9 million acres was set in the revised 1942 production goals. Price support was provided at 85 percent of the comparable price at the beginning of the marketing year, October 1, but such prices to be not less than \$1.60 per bushel, farm basis, for U. S. No. 2 Yellow of recognized varieties of high oil content as designated by State agricultural experiment stations with the approval of the War Boards.

-- Flaxseed For Linseed Oil --

Finally flaxseed: Seedings in 1941 were 3,367,000 acres. The 1942 production goal is 4-1/2 million acres. Price support is offered at 85 percent of the parity price at the beginning of the marketing year, June 1, but at not less than \$2.10 per bushel, farm basis. Loans averaging at least \$2.10 per bushel, farm basis, are to be available, with location and grade differentials.

-- Outlook if Goals are Achieved --

It is achievement of these goals which would ease the fat and oil situation and fortify us against the possibility of deficits. The accomplishment of the goals would mean about 700 million pounds of peanut oil, 1,100 million pounds of soybean oil, and 600 million pounds of linseed oil from domestic flaxseed.

Supplies of fats and oils from domestic production, stocks, and probable imports should be sufficient to maintain consumption and exports in 1942 at the 1941 level, even if imports of oils and oilseeds from the Pacific are completely cut off. Under such circumstances, however, stocks would be reduced considerably. This will also involve the substitution of domestic or Latin American fats and oils for such items as coconut, palm, and tung oils for some uses.

-- Consumption and Prices in 1941 --

Domestic disappearance, or consumption, of primary fats and oils for 1941 is provisionally estimated at the 11 billion pounds, previously noted, as compared with 9.7 billion pounds in 1940. Imports of oilseeds and oils ran about 10 percent below 1940 levels between January and June 1941, but they showed a gain of 39 percent in the third quarter of the year due to improved shipping conditions in August and September. In recent months about 20 percent of our total fat requirements have been met by imports, more than 60 percent of which have originated in the Pacific area.

Prices of fats and oils were at a low level in 1939 with large world supplies available. Reduced shipping space and increased shipping costs early in 1941 restricted the volume of imports of both oils and oilseeds, thus driving a wedge between prices in the United States and in surplus-producing areas. This coupled with increased domestic demand and substantial Government purchases of lard, resulted in sharp advances in domestic prices during the first half of 19

Prices leveled off in July and August 1941, advanced in September, and declined again in October. They were advancing again in December. Ceiling prices were imposed on all fats and oils except butter on December 13, 1941, by the Office of Price Administration. This Price Schedule No. 53 forbade the sale, whether spot or future, of raw, crude, or refined fats and oils, including lard and cottonseed oil, at prices above those prevailing on November 26. This was to curb run-away prices in expectation of import curtailment. At the end of December these ceilings were raised 11 percent and the Office of Production Management temporarily limited inventories to a 90-day supply.

On January 26, 1942, the War Production Board relaxed this order by removing the 90-day inventory restriction and substituting the provision that no processor of oils and fats might purchase more than was required to fill orders and to maintain a practical working inventory. On February 4, 1942, the Office of Price Administration raised the ceiling on cash lard prices and excluded linseed oil from the ceiling order. Other oil and fat prices remained unaffected.

-- Supply and Demand --

An unprecedented demand for fats resulted in 1941 from marked advances in industrial and building activities and in consumer incomes. All groups of fats and oils shared in this increase in consumption or disappearance in the first 9 months of 1941 as compared with the same period in 1940. Consumption of cottonseed oil, peanut oil, soybean oil, lard, and edible beef fats all showed remarkable gains. Minor decreases occurred in consumption of butter, and corn oil, while consumption of olive oil dropped by half due to deficiency in imports.

A gain of 37 percent occurred in the utilization of inedible tallow and greases for use in soap, while consumption of both coconut and palm oil was more than 90 million pounds greater than in the first 9 months of 1940. These increases were largely offset by reduced use of marine animal oils, inedible olive oil, babassu oil, and palm-kernel oil.

Striking gains took place in the drying-oil field with disappearance of linseed oil up 38 percent and of castor oil up 78 percent from 1940. Dehydrated castor oil is being used increasingly as a substitute for tung oil. The relatively small consumption of oiticica oil more than doubled. Tung oil consumption was maintained at about the same level as in 1940, despite sharply curtailed imports. Consumption of perilla oil was reduced.

Imports of fats, oils, and oilseeds, in terms of oil, were 39 percent greater during the third quarter of 1941 than during the same period in 1940, though they had been 10 percent below 1940 in the first 6 months of 1941. The gain during the first 9 months considered as a whole was 4 percent for 1941 over 1940. Exports also, especially to the United Kingdom, were materially larger. On September 30, 1941, factory and warehouse stocks of primary oils and fats amounted to about 1,980 million pounds, or 229 million pounds less than one year earlier.

-- Processing Problems --

Remaining difficulties in achieving the 1942 oil and fat goals are concerned with storage and transportation, and with the supply of processing equipment for soybeans. The problem with soybeans is to provide sufficient crushing facilities for processing 125 million bushels of beans or 30 million bushels in excess of present maximum capacity in the Midwest. Ample crushing facilities do exist in the South and in the Far West, however. There is no processing-equipment problem with cottonseed and peanuts.

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UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C.

February 17, 1942

Food for Freedom Program
Background Information Series - No. 3

DRY EDIBLE BEANS

-- Domestic and Foreign Demand --

Producers of dry edible beans are urged to increase production in 1942 above the 1941 record output to meet wartime needs.

In addition to domestic requirements these beans are needed for shipments under the Lend-Lease Act and by the American Red Cross. Domestically, adequate supplies of dry edible beans are needed to meet commercial, school lunch, and relief requirements.

-- 1942 Goal --

For 1942 the estimated requirements call for 2,600,000 planted acres, an increase of 13 percent over the 1941 acreage planted. This acreage should result in a probable production of 20,400,000 bags, which would be 9 percent above the 1941 harvest and 44 percent more than the five-year, 1935-39, average.

Included in the 20,400,000 bags are: 9,600,000 bags of three types of white beans (Pea and Medium White, Great Northern, and California Small White); 4,500,000 bags of Pinto and Pink beans. In addition, a production of about 6,300,000 bags of other types of dry edible beans and seed is expected.

-- Price Support --

The Department of Agriculture announced on January 19, 1942, that the prices for Pea and Medium White, Great Northern, California Small White, Pinto, and Pink dry beans would be supported through June 30, 1943, as follows:

(1) The Department will support the market for these five types of beans produced in 1942 at a price of \$4.75 per 100 pounds for U. S. No. 1 grade beans, and \$4.60 per 100 pounds for U. S. No. 2 beans, in bags, carlots, f.o.b. cars at country shipping point, or at a level equivalent to 85 percent of the parity price as of the beginning of the 1942 marketing season for dry edible beans -- whichever is higher. The marketing season for dry edible beans opens September 1.

(2) Department purchases of dry beans, to be made by the Surplus Marketing Administration, will be confined to clean dry beans of the specified five types grading U. S. No. 2 or better, packed in new cotton or burlap bags of the kinds usually used commercially for export.

(3) The dry edible beans will be purchased from growers, associations of growers, their authorized agents, or dealers. Purchases of 1942 crop beans will be made insofar as practicable from the production of growers cooperating in the AAA program.

(4) Federal inspection of all beans bought will be required, with vendors paying all inspection costs.

(5) Insofar as is practicable, dry beans bought by the Surplus Marketing Administration prior to need for immediate shipment will be stored in local producing-area warehouses and elevators.

In the event of undue increases in domestic commercial prices, stocks of beans may be resold to stabilize market prices. If the Department has supplies of these beans on hand in later years and their sale becomes necessary, every effort will be made to protect the interests of growers by means of orderly liquidation of these holdings and coordinate this liquidation with acreage adjustments.

-- Increases Expected in Dry-Land Areas --

In view of the significant increase in white beans in 1941, it is expected that the dry bean goal can best be met by increasing acreages of Pink and Pinto beans. The principal areas where the acreage of these beans can most likely be increased materially are in the Western States, particularly in the dry-land regions of Colorado and New Mexico, and in California and Idaho. On irrigated land in Western States dry edible beans would compete principally with sugar beets and potatoes for acreage.

-- Purchases --

From the beginning of the purchase program in March, 1941, through January 31, 1942, Department of Agriculture purchases for Lend-Lease and other purposes amounted to about 201,000,000 pounds, or 2,010,000 (100 lb.) bags.

Beans, dry edible: Planted acreage, yield per harvested acre, production season average price received by farmers, imports, exports, and domestic consumption, 1935-39 average, 1940, 1941, and 1942.

Year	Planted acreage	Yield per harvested acre	Production <u>1/</u>	Season average price received by farmers	Imports, <u>2/</u> year beginning September	Exports, <u>2/</u> year beginning September	Domestic consumption
1935-39 average	1,000 acres	Pounds	1,000 bags	Dollars per cwt.	1,000 bags	1,000 bags	1,000 bags
1940	1,899	839.8	14,150	3.43	196	258	11,548
1941 <u>3/</u>	2,075	889.9	16,943	3.17	120	1,545	12,310
1942 <u>4/</u>	2,304	901.1	18,738	4.64	100		13,400
	2,600		20,400				

1/ Bags of 100 pounds (uncleaned)

2/ Bags of 100 pounds (cleaned)

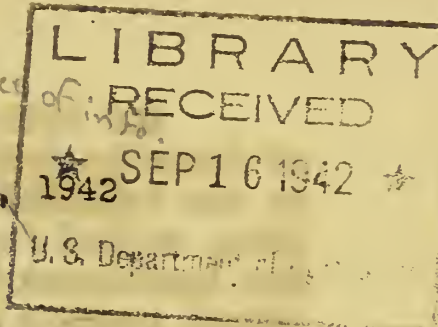
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UNITED STATES DEPARTMENT OF AGRICULTURE
Washington, D. C.

February 24, 1942



Food for Freedom Program
Background Information 4

CHRONOLOGY OF AGRICULTURE'S PART IN THE WAR

During the year 1941 the National Defense Program radically changed the needs of the Nation for farm products. Late in the year the outbreak of war made even more sweeping changes in these needs while at the same time making drastic alterations in such facilities of agricultural production as materials, labor, transport, and storage.

The basic war effort of farmers and the Department of Agriculture has become widely known as the Food For Freedom Program. The aim of this program is to produce in 1942 up to or in excess of goals that will meet the needs of the Nation and its allies. It is anticipated that the quantities of farm products called for by the goals will provide our own people with sufficient supplies of food and fiber as well as enable us to aid such peoples among the United Nations as require help, and can get transport for food. The war program of agriculture basically involves gearing existing organization to new problems and new demands and creating new organization if necessary.

The primary war function of farmers is to produce the food, fiber, and other farm commodities required by us and by our allies, without undue destruction of soil and water resources. The primary war function of the Department of Agriculture is to help farmers produce, and to help processors, storers, transporters, and handlers get the farm products to the right place at the right time.

The Department therefore seeks to help the farm suppliers make available such seeds, fertilizer, insecticides, farm machinery, containers, and to help public agencies mobilize such labor, as farmers require for war production. It is also helping to make processing and storage facilities available. It lends aid in transportation problems. It assists forest owners and operators to produce lumber and naval stores without undue forest destruction. It aids farmers in conserving scarce materials, houseworkers in enriching the family diet. It purchases and assembles food and other agricultural materials for shipment under the Lend-Lease Act. It helps handle the problems of price relationships in a war economy.

-- The Lend-Lease Act --

In December 1940, and January 1941, we were just beginning to emerge into a new period in our economy. During the previous eighteen months agriculture had been struck blow after blow as the war closed the European market to American farm products. British need to conserve dollar exchange for buying munitions even shut American farm products out of the United Kingdom. Our main problem then was to prevent the disorganization and bankruptcy of American agriculture by the extinction of the foreign market.

But soon after the beginning of 1941 we began to foresee an extension of domestic demand caused by the greater employment and higher wages incident to the National Defense Program. The Secretary of Agriculture in late December 1940, called for expansion of hog production to meet new needs looming ahead. The Lend-Lease Program began to take shape foreshadowing a new market for lard, animal protein foods, vitamin concentrates, and other products we had been unaccustomed to export.

It was on January 6, 1941, that the President outlined his Lend-Lease Plan to the Congress. The Lend-Lease Act was passed and became law March 11, 1941. Under this law funds became available to finance the shipment of urgently needed foods to Britain and during 1941 more than \$600,000,000 of the one-and one-half billion dollars thus made available was spent for the purpose. On April 3, 1941, the Secretary of Agriculture announced what was then called the Food For Defense Program, designed to help farmers produce the food required by new foreign and domestic demand.

For some time the Department had been purchasing surplus stocks of food to use in its low-cost milk, school-lunch, and direct-relief plans, and it had also handled the Food Stamp Program and certain purchases for Red Cross use. These purchases had been made in the main for surplus disposal, commodity diversion, and price support. The task under war conditions is, however, to provide a nutritionally adequate diet for all citizens of the United States as well as to plug gaps in the diets of other nations fighting for democracy.

-- Price Support and the 1941 Shipments to Britain --

The British, now cut off from their usual sources of supply, urgently required from us pork, lard, eggs, cheese, and evaporated and dried milk. American farmers had available huge stores of feed grains in the Ever Normal Granary. The immediate task was to convert these as rapidly as possible into livestock products. To protect farmers in undertaking this greatly expanded production the Secretary announced April 3 that prices, Chicago basis, would be supported through Government purchase programs as follows:

Hogs at \$9 a hundredweight; dairy products on the basis of 31 cents per pound for butter; chickens at 15 cents a pound and eggs at 22 cents a dozen. On May 6, in the effort to expand the production of certain varieties of dry beans 35 percent, a price-supporting program was announced. A statement was also issued on tomato prices in the effort to produce more equitable returns to growers, and thus stimulate production.

All the purchase programs -- domestic and Lend-Lease -- have been meshed together to achieve these larger objectives. Between March 15 and December 31, 1941, more than \$600,000,000 of Lend-Lease funds were expended in the main for dairy, poultry, and pork products, but there were also heavy purchases of fruits and vegetables, mostly dried, cereals, citrus fruit-juice concentrates, vitamin concentrates, tobacco, cotton, corn, and gum rosin. Up to January 1, 1942, more than 3,311,000,000 pounds of agricultural commodities were delivered to the British Government for Lend-Lease shipment.

The Secretary of Agriculture in April 1941, embarked on a course of supporting minimum prices over long periods of time by management of the public purchase and loan programs, and of releasing Government-held stocks of feed left over from previous crops in the Ever Normal Granary. The aim was to encourage by price incentives the increase needed in production of certain commodities. The principles of price support for the commodities in which expansion is asked was written into law in the Steagall Amendment to the Act extending the life of the Commodity Credit Corporation, Public 147, 77th Congress.

-- Agricultural Defense Relations --

By the end of April 1941, the difficulties of farmers in obtaining materials, labor, transport facilities, and storage space required to speed up their production began to increase. It was plain that the production program would falter unless close liaison was maintained by the Department with the priorities and allocations and the labor-supply authorities of the defense agencies.

Accordingly, the agricultural division of the former National Defense Advisory Council was transferred to the organizational framework of the Department of Agriculture by Presidential letter of May 5, 1941. Presentation to the controlling authorities of agriculture's needs for sharing in the scarce supplies of material, labor, and transport was thus centered in one spot where the negotiators could be in day by day consultation with the Department's people who operate the public farm services and plan the farm production program.

-- The Organization of the War Boards --

By July 1941, it became obvious that the changes in requirements for farm products and in the conditions under which farmers would produce were so sweeping that all public agricultural services had to be geared together to help farmers take the swift action such a situation made imperative. On July 5, 1941, the Secretary of Agriculture organized the field forces of the Department in each State and county into USDA Defense Boards.

These Boards were under the chairmanship of the farmers' direct representatives in the management of Federal agricultural programs, the chairmen of the State and county Agricultural Adjustment Administration committees. The Boards formed a rallying point for the responsible officers in each State and county of the Department and cooperating State agencies. The County Boards were made responsible to the State Boards, the State Boards to the Secretary.

The function of these Boards was to see to it that the work carried on by all agencies contributed the utmost in helping farm families do the wartime work the Nation asked of them. On January 7, 1942, the Secretary directed that the titles of these State and County U.S.D.A. Defense Boards be changed to U.S.D.A. War Boards. Their functions remained unaltered. The Boards seek to aid farmers in turning out the production the United States requires to win the war.

-- The Original 1942 Farm-Production Goals --

In July 1941, the Department of Agriculture undertook a historically unique job. It set its experts to estimate how much of each important farm product would be needed in 1942 to serve the Nation's purposes. This had never been done before. In two months the calculations were completed. The 1942 Food for Freedom plan was ready in early September 1941. The Secretary and his associates took it out to the Boards in a series of regional meetings.

There the estimates were examined and adjusted in the light of more precise knowledge of local conditions. The Boards then (in October 1941) set the AAA county and community committeemen to work canvassing each of 6 million farms and helping the operators frame a 1942 production plan that would enable each one to do his share toward meeting the national goals.

The goals had been set up to meet domestic civilian and military needs and of Lend-Lease requirements. Agricultural production had to be planned as carefully as industrial production so that the Nation would have exactly the commodities it required in the quantities essential. One requirement was animal-protein foods for a fourth of the British people. Whereas British civilian animal-protein rations were 27 percent below pre-war levels early in 1941, by the end of the year they were only 5 or 6 percent below as a result of shipments from the United States.

-- Farm Machinery Repair and Scrap-Iron Collection Programs --

Agriculture's effort was thus launched well ahead of the 1942 production season. The Defense Boards, while carrying on the program of helping the farmers plan their 1942 output farm-by-farm, gave attention to other phases of the Government's part in servicing farmers for their war task. They undertook farm-machinery repair and scrap-iron collection programs and sought to aid farmers in the conservation of scarce and essential products and materials such as burlap bags, rubber, fertilizer, and insecticides.

Because of need for steel and other metals in war production it has been necessary to reduce the quantities going into farm machinery. Materials available for new farm machinery have been restricted to about 83 percent of that available in 1940, but material for repair parts has been made available at a rate of 150 percent of 1940. The Nation-wide program for the repair of farm machinery was outlined in a letter from the Secretary to the Boards under date of October 23, 1941.

Farmers were urged to repair and keep in continued use much farm machinery that would under normal conditions be replaced. They were asked to maintain farm machinery in the best possible operation condition, also to increase productive efficiency. Supplementary to this was the scrap-collection program to secure for use in making war material the estimated 2-1/2 billion pounds of scrap iron and steel estimated to be on American farms. This campaign was introduced by a letter of the Secretary addressed to the Boards under date of October 29, 1941.

-- Shortages in Material and Labor --

Steps were also taken to ensure farmers of other supplies. The nitrate of soda available is limited and must be rationed. Burlap containers will not be available in the grade used to bag fertilizer so that thick, multiwall kraft paper bags must be substituted. Farmers have been informed how to preserve and re-use such burlap bags as they now have or may secure later. They have been informed also on the salvage and re-use of baling wire.

The public employment offices of the Nation have been Federalized under the United States Employment Service. Its farm placement service is being expanded rapidly to help meet farm labor shortages. The service will work in close coordination with the War Boards. Local draft boards also have instructions listing types of agricultural production considered essential; these are for their guidance in granting occupational deferments, though final decision in each case rests with the board.

-- Relocation of Displaced Farm Families --

When the Lanham Defense Housing Act was approved by the President October 14, 1940, and the Congress appropriated funds to initiate a program of public housing for workers in defense industries, the Farm Security Administration was designated as one of the construction agencies under the Act's procedure. The President designated the FSA also as an agency to build temporary defense housing.

Many families have been forced to leave their farms to make way for military expansion. The Department, through the FSA, makes loans to aid them in finding new homes and in tiding them over until their land is paid for. In some instances where families are unable to find suitable farms the State relocation corporations acquire farm land, provide housing, and lease the farms to displaced families.

-- War --

On December 7, 1941, came Pearl Harbor and a day later we were openly at war. Immediately the need for farm products changed again. While we still needed huge quantities of protein and vegetable foods over and above normal supplies, we now required also greatly increased amounts of fats and oils. War in the Pacific sharply curtailed or shut off entirely our sources of palm, coconut, perilla, tung, and other not easily replaceable oils.

The goals had to be resurveyed; so did the supply situation. The great draft on manpower for larger armed forces and increased production of war material would also have profound effects on agriculture. Transport became a severer problem and so did packaging. Storage space might be short. The need for production was greater but the means of production smaller. The public services for agriculture must function at maximum effectiveness.

-- Reorganization of the Department for War --

On December 13, 1941, the Secretary announced a reorganization of the Department. He combined seventeen agencies of the Department, each headed by an officer reporting to him, into eight groups. The Department War Board was formed from the heads of these eight agencies and the staff officers heading the Office of Agricultural Defense Relations, the Bureau of Agricultural Economics, and the Extension Service. The Executive Order implementing this reorganization was issued by the President February 23, 1942.

In the Department War Board the eleven men responsible for operating the major services of the Department to farm people meet almost daily with the Secretary to survey the needs of farmers for services and information, to formulate new means of meeting these needs, and to decide upon the work to be done by each agency in carrying through each new project required. Instructions are transmitted to the State War Boards, worked into form for rapid application in the State, and passed on to the County War Boards for action. The new organization can move swiftly. It is geared to the high-speed requirements of a war in which adequate farm production by the United States is indispensable to victory.

-- The National Garden Program --

On December 19-20, the National Garden Conference was held in the Department of Agriculture auditorium under the auspices of the Department, the Federal Security Agency, and the Office of Civilian Defense. The goal of 1,300,000 additional farm home gardens was reiterated. Need was stated for city home and community gardens where soil is favorable, supervision expert, and no wastage of seed, fertilizer, insecticides, equipment, or human energy will probably occur.

The basic objective of the program is to enrich the diets and improve the nutritional status of our people. No all-out, backyard garden campaign for cities and towns is intended. The efficient use of labor and materials is stressed because of shortages of seed, fertilizer, insecticides, and metals. The National Garden Program will aid in the production of food right at the point of consumption, thus affecting important savings in transportation, processing, preserving, and packaging. Increased production of home-grown foods will also aid in protecting the direct-relief and school-lunch programs.

-- The Canned Vegetable Program --

On December 19, 1941, also, goals were announced for the 1942 pack of the four principal vegetables canned -- tomatoes, peas, corn, and snap beans. These make up four-fifths of all vegetables canned. The 1942 goal is a pack 45 to 48 percent above the 1936-40 average, though most of the increase is in peas and tomatoes. The objective is to use canning plants to full capacity.

The Department has also established fixed prices at which it will undertake to purchase all quantities of canned tomatoes offered to it through December 31, 1942, and of canned peas offered through October 31, 1942. The canned peas and tomatoes will be purchased only from canners who are certified by their USDA State War Boards as having paid the prices specified to the growers from whom they buy. The tin required to cover the vegetable pack has been allocated.

-- The New 1942 Farm-Production Goals --

The revised 1942 farm-production goals mentioned above were announced January 16, 1942. Particular emphasis is placed upon increased production of fats and oils. The goal for soybeans is 54 percent, that of peanuts 155 percent, and of flaxseed 34 percent above acreage planted in 1941. Price support is extended to all three crops and loans on flaxseed will also be available. The program covers only such of these products as are marketed for oil.

The goal for eggs is up 200 million dozen. Milk remains the same as in the September 8, 1941, announcement, having been set at a level to tax the capacity of the dairy industry. The goal for hog slaughterings has been increased four million head and more lard is to be produced.

A slaughter of 28 million head of cattle and calves will be needed. This is about 8 percent above 1941 levels. The estimated slaughter of sheep and lambs differs little from that in 1941.

Goals of 13 percent above 1941 production have been set for dry beans and 73 percent above for dry field peas. There is price support for both crops.

The wheat goal is the same as announced in September, 88 percent of 1941 levels. In order to provide storage space for the 1942 crop and to make additional feed available in regions where it is not plentiful, stocks of Government-owned wheat will be released at prices comparable with those of feed corn.

Corn production should be 8 percent above 1941 levels and allotments have been increased 10 percent in the commercial area. Estimates for rye, hay, and oats are from 1 to 2 percent above 1941, but barley production should be 6 percent higher. All acreage restrictions are removed for rice and an additional five million bushels over and above the September goal should be produced.

While there are huge cotton reserves, there is need for more long-staple cotton. The cotton goal was therefore increased by a million acres and premiums will be paid on staples of 1-1/8 inch or more. The revised goals for all types of tobacco except cigar wrapper are higher than those established in September. There are no limitations on plantings of sugarcane or sugar beets.

Goals for turpentine and rosin have been set at 58 percent above 1941 production. It is estimated that lumber production will top that of 1941 by 3 percent; pulp wood production will be about the same.

In over-all terms the new 1942 production goals will exceed average annual production in the 1935-39 period by 19 percent and 1941 production by 6 percent. Omitting cotton, wheat, and tobacco, we should produce in 1942 one-fourth more of the remaining commodities than the average annual output in the 1935-39 period. The program will tax farmers to the utmost under war conditions. They must improvise and rely on ingenuity to achieve it.

-- The Department's Wartime Services --

In the wartime Department the services which help the farmer adjust his acreage upward or downward as the Nation's needs require, and which protect the incomes of farmers and the supplies of consumers by maintaining fair prices and income levels, are all brought together into an Administration of Agricultural Conservation and Adjustment. The services focus on the objective of applying inducements and controls to help farmers manage the national agricultural resources so as to produce what the Nation needs to win the war without soil or water wastage.

The services of scientific research are now integrated under one Administrator of Agricultural Research, so that research in the various scientific disciplines may be turned to the one end of finding facts and principles that will help farmers and the Nation do their wartime job. Agricultural research workers are being called upon to undertake scores of projects for the military forces as well as for agriculture. The new unit is called the Agricultural Research Administration.

The services concerned with the marketing of agricultural products and including the stupendous job of quickly purchasing hundreds of million of dollars worth of food and fiber for the United Nations are now integrated under an Agricultural Marketing Administration. Here are located services to the transporting and processing industries, as well as the provision of price supports to encourage expanded production of commodities required for victory.

These three new organizations combine and streamline the work previously carried on by thirteen line agencies and two staff agencies of the old Department. Five other line agencies remain unchanged, their functions having previously been integrated into organizational patterns that need no further amalgamation with other agencies in order to function at top speed in wartime. These agencies are: Farm Security Administration, Commodity Credit Corporation, Forest Service, Farm Credit Administration, and the Rural Electrification Administration.

Certain FSA war functions have already been mentioned. This agency has carried on the important function of re-training and rebuilding the health and skills of the disadvantaged families in American agriculture. Loans were provided to enable them to get a start as independent producing units. From this rehabilitated group will come a very important part of the increased production called for in 1942 and thereafter. The contribution of the Nation to making these people skilled producers will now be returned with interest just when increased production becomes imperative.

The CCC maintains the system of loans on basic commodities which form the core of the entire mechanism for adjusting acreages of basic crops. By its commodity buying and selling activities it plays a major part in the maintenance of price supports and the stabilization of feed prices in order to provide farmers with price incentives for carrying on maximum wartime production.

The Forest Service guards public forest lands against destruction, manages its output of lumber and its grazing capacity, and assists private forest owners in getting needed production without destruction of timber, soil, or water resources for the future. Wood is required for many additional purposes during

war and every effort must be made to meet increased timber production requirements without increased devastation of forest resources.

The FCA gives farmers a public source of credit at reasonable rates and on a sound appraisal basis. It seeks to provide financing for wartime production without risking inflation. It urges borrowers to pay off existing indebtedness, build reserves for the future, and avoid speculative increases in production.

The REA administers the public program of helping farm homes and farm enterprises achieve new comfort and efficiency by using electric current. In wartime the job of the REA co-ops becomes one of plugging gaps in the farm labor supply by setting kilowatts to work doing thousands of things to save human toil. Increased milk and egg production of better quality becomes more easily possible through the use of electricity.

-- Post-War Plans --

The National Resources Planning Board has been charged with the responsibility of centralizing our post-war planning efforts for the Nation as a whole. The President has instructed it to collect, analyze, and collate all plans for useful public and private action in the post-war period, insofar as these concern natural and human resources.

In its publication: "After Defense - What," the Board has indicated the magnitude of this job, the more desirable objectives, and the appropriate fields of action to be explored. Under Executive Order 8455, and the Employment Stabilization Act, the Board is developing six-year programs of Federal public works through proposals submitted to it by various Federal agencies. The Department of Agriculture naturally has its share in developing a shelf of post-defense projects.

On November 19, 1941, the Department announced the appointment of a special committee and of nine regional cooperating committees to make plans for a three-point program for post-war agriculture. The committees are to work cooperatively with State agricultural colleges and State and county planning committees which include some 122,000 farm men and women in nearly 1,900 counties. The burden of the planning job must in last analysis fall upon the local land-use-planning committees. That is the only way to ensure that each project will be adapted to local needs.

The broad objective is improved levels of rural living. In a year or two we should have a number of carefully prepared plans for public activity, each tailored to fit the needs of the various regions and localities in terms of employment, conservation, and resources.

The comprehensive program suggested by the Department may be summarized under three main points as follows:

1. A public works program concerned primarily with the preservation and improvement of our natural resources -- reforestation, soil conservation, flood control, the protection and development of water facilities, range improvement, and similar tasks.

2. A program mainly concerned with the preservation and improvement of our human resources -- better rural housing, increased rural electrification, improved and more accessible medical care, improved and expanded educational, library, and marketing facilities for rural people.

3. A study of the relationships between agriculture and industry and the analysis of such problems as industrial decentralization, the distribution of additional farm products through such devices as the food-stamp, school-lunch, and low-cost milk plans, the retention of our share of the farm export market, and methods of maintaining both industrial and agricultural activity on a basis of maximum output with full employment.

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Food For Freedom Program
Background Information Series - No. 5

WARTIME FARM PRODUCTION PROBLEMS

In war, important materials used in farm production, as well as manpower, become vital to military success.

In 1942 the United States will produce three times the weapons and supplies of war that were produced in the eighteen months from the beginning of defense preparations until America's entry into the war. These weapons will include as many tanks and planes as Germany managed to produce in all her years of preparation for war.

The American people spent about \$13 billion for defense from July 1940 to the Japanese attack on Pearl Harbor. This year they will spend \$40 billion and will put close to half of their productive efforts into war. War expenditures for the first month of combat rose to \$1,977,000,000 and in January, the second month, rose again to \$2,276,000,000. By the end of the year, they will increase to \$4 billion a month. Next year, with even greater output of ships, tanks, and guns, monthly expenditures for war will rise to \$5 billion.

No country fighting a war has enough of everything, and America is no exception. Everywhere shortages have already developed in practically all metals, in rubber, in many chemicals, in paper and paper products and in numerous other materials. Before the end of the year, war factories will need 10 million more workers. Tens of thousands more freight cars will be pressed into hauling direct and indirect war supplies. Farmers aiming at this year's and next year's food production goals must be prepared to reach them in spite of diminishing supplies of raw materials, labor, and transportation.

Modern fighting planes can't be made without aluminum, and tanks and warships use up large quantities of it. This year the United States will produce over 600 million pounds, twice as much as the entire world put out in 1936. The Army and Navy will get every pound of it, but it still won't be enough to meet future needs. War planners are aiming at a production of close to 2 billion pounds.

Steel production in 1941 went up to 82.5 million tons from 61.6 million tons in 1940. New furnaces will make possible a still greater production, practically all of which will be required for war and essential civilian uses. While copper production is being pushed to record limits, and 90% of the world's supply is controlled by the United States and its Allies, very little will be available for light, communication, and the other civilian uses to which copper is customarily put.

The war effort also requires the building of new factories and the production of machine tools, motors, power lines and other facilities needed to supply them. In addition, a minimum of materials is required to keep certain essential civilian industries and services going.

The war emergency -- the very factor contributing to record farm income and the sharply increased need for mechanical farm tools -- has also acted to limit the amount of equipment available for the farmer. Feeding the Nation, in addition to farm machinery, requires gasoline and tires for farm trucks, power for farm pumps, chemicals for fertilizers and sprays, refrigeration machinery, packing plants and canning factories. All of these will be affected by the drain of materials into the direct war effort.

-- Fertilizer Outlook --

Because of the war and the resulting shortage of ships, importations of nitrate of soda may be less than importations during normal years.

Beginning February 1, and each month thereafter, a certain amount of nitrate of soda will be allocated to agriculture by the War Production Board. The amount released each month will depend on the supply on hand. The quantity rationed to any section of the country during any month will depend on the crops in that section requiring side dressing.

Nitrate of soda rationing does not reach to the farmer. The nitrate is rationed to the fertilizer dealers in fair proportion to the needs for side dressing in the territory served. To carry the rationing direct to the farmer would require a tremendous force of administrators that could serve the country to better advantage at more productive work. The War Production Board, therefore, depends on the fertilizer dealers to see that the nitrate gets to the farmers that have the greatest need for it.

The U. S. Department of Agriculture has no legal jurisdiction as to how the nitrate of soda is to be distributed to farmers in any one section.

The supply of mixed fertilizer available this spring will be greater than the amount that was used during the same period last year. There is enough potash being mined in this country to take care of the needs of agriculture. Some of it is in the form of 25% potash salts, but most of it is 60% muriate. Therefore, farmers needing muriate of potash can save money by buying 60% rather than 50% goods. The production of superphosphate is approximately 10% greater than last year. Only from 20 to 25% as much cyanamid will be available as was used last year. Very little uremon will be available. Materials usually imported from Europe, such as calcium nitrate, calnitro, nitrate of potash, etc., will not be available.

The production of sulphate of ammonia is greater than at any other period. The fertilizer industry has contracted for most of the output. Since fertilizer manufacturers are not able to obtain some of the other nitrogen fertilizers for their mixed fertilizer, most sulphate of ammonia will be used in mixtures. Only a limited supply may be available for direct application or for home mixtures.

-- Insecticides, Fungicides, and Disinfectants --

In general, the supply seems to be somewhat adequate, with some tight spots probable. Farmers should be urged to order their fumigants in advance to avoid possible shortages later on.

-- Packaging --

New burlap is under complete allocation, with two-thirds of the supplies allocated to Army, Navy, and civilian defense for sandbags and camouflage material. The remaining one-third is available for agricultural and chemical bags. Imports have been reduced by the war. Special provision has been made for farmers and handlers of seed potatoes, peanut seeds, and wool to obtain burlap bags.

Many users of burlap will have to shift to cotton bags, and a stockpile is being developed by the Defense Supplies Corporation, both as an incentive to the manufacturers to make cotton bags and for allocation for war and agricultural purposes. Other growers will shift to multi-walled paper bags and wooden basket, barrels and boxes. There may be a tight situation in paper bags, and wooden packages will have to be ordered well in advance.

The use of tin for containers has been drastically restricted, and limited to essential products.

-- Farm Machinery --

Materials used in the manufacture of farm machinery, such as iron, steel, copper, aluminum, zinc, are also needed to build airplanes, tanks, ships, and guns for our fighting forces.

The War Production Board has limited the manufacture of farm machinery to approximately 83 percent of the 1940 level, with a quota of 150 percent for repair parts. The quotas for individual types of implements vary, according to comparative needs in the "Food for Freedom" program. Thus, peanut pickers have a quota of 208 percent, and two-row horse or tractor-drawn listers a quota of 8 percent. State and County War Boards have copies of the quotas.

In view of the limitation on new farm machinery and the possibility that manufacturers may not be able to reach their quotas because of heavy military requirements since Pearl Harbor for strategic materials, farmers must repair their farm machinery and keep it in running order.

-- Steel Materials --

Steel materials used by farmers or farm machinery repairmen include concrete reinforcing bars, pipe and tubes, bale ties, nails, welding rods, wire rope, wire, woven fence wire, poultry netting, barbed wire, stucco netting, staples, fence posts, gates, galvanized sheet and strip.

Quotas have been established by the War Production Board for these products, but military requirements may create temporary shortages. In the case of baling wire, the War Production Board is asking manufacturers to make them available at times and in areas where they are the most needed.

-- Farm Buildings --

Shortages of materials will necessitate restriction of new farm construction. Farmers are urged to make repairs promptly, especially in areas where war construction may drain away material and labor shortages are likely to develop. Emphasis should be put on use of temporary and make-shift construction, such as trench and other types of emergency silos, conversion of unused barn or other space for housing of poultry and hogs, use of straw sheds for cattle and sheep. Extra precautions should be taken to prevent fire losses.

-- Storage --

The 1941-42 crop year has been marked by probably the greatest pressure on grain storage capacity ever experienced in this country. Commercial facilities have been in full use. Much temporary capacity has been made available on farms and at commercial storage points. And still it has been necessary to pile grain on the ground in some areas of heaviest production and to move some grain stocks out of normal market position.

Probable Grain Supply, 1942: Assuming acreages needed to assure 1942 production goals, and near-average yields, the total supply (crops plus carry-overs) of nine grains requiring tight bin storage would be 3,718 million bushels in 1942 as against 3,659 million in 1941. With yields equal to 1941 (December 1 estimates), the supply would exceed 1941 by about 200 million bushels, due mainly to larger 1942 carry-overs, and larger acreages of some crops. These data indicate that barring below average yields of crops in 1942 the supply of grain requiring storage will be greater than last season.

Grain Storage Capacity: A complete inventory of commercial grain storage capacity in the United States is being conducted by the Agricultural Marketing Service in February 1942, to ascertain changes in this capacity. Last year a similar survey revealed a total commercial capacity of approximately 1,600 million bushels, of which a maximum of about 1,300 million bushels space could be occupied at one time. Several rough estimates of farm storage indicate a total capacity of about 2 billion bushels.

New construction of storage space for 1942-43 will be held to a minimum because of serious shortages of critical materials such as motors, rubber, rope, and metals which are required in elevator construction. Materials will probably be made available only for commercial elevators of the annex type located in areas that were congested last year, and for farm storage requiring only a few critical materials such as nails.

In view of the prospects for a large grain crop this year and the limited possibilities for new construction of storage space, another year of strained storage conditions appears likely. This is true even after allowance is made for

for more rapid rates of disappearance as the result of increased feeding to attain production goals for pork, poultry, and dairy products.

Particularly, strained storage conditions will probably be encountered in California, the Pacific Northwest, Inter-Mountain States, and Southern Rice States where the shortage of burlap will force more grain into bulk storage. In the past these areas have been greatly dependent upon sacks and flat warehouses for the storage of grain. Sufficient bulk storage facilities are not available, so it will be necessary to convert flat storage to bulk storage wherever possible and to construct new bulk storage with limited amounts of critical materials.

Peanut Warehouses: The greatly increased goals for peanut production of 5,000,000 acres in 1942 compared with 2,000,000 acres in 1941 will create a storage problem that is apt to be serious in some areas such as western Georgia and eastern Alabama. In other areas old cotton and tobacco warehouses, of which there will probably be a surplus in 1942, may be pressed into service.

Tobacco Storage: The tobacco storage situation which appeared to be critical last summer and fall, especially in the blue-cured belt, has been alleviated as the result of Lend-Lease shipments. The outlook for 1942 is materially improved, although some congestion is possible depending upon the quantity of exports. In the event that a backlog of export tobacco again becomes serious, it may be necessary to make greater use of inland storage space. This space may be augmented by the conversion of cotton warehouses, old cotton mills as well as tobacco auction warehouses to tobacco storage.

Cold Storage: A recently completed survey indicates that no general shortage of cold storage is in prospect in 1942, although local congestion may show up here and there. Because of the shortage of materials required for cold storage construction, handling arrangements may have to be altered to relieve such congestion.

TRANSPORTATION

-- Railway Situation --

The railways have been seriously handicapped in being unable, because of lack of materials, to have new cars manufactured. Sufficiently high priority ratings have been assured to provide materials for the construction of 36,000 cars in the months of February, March, and April. January car production is estimated at 9,000. While preference is given to the type of car suitable for the transportation of military material, such cars would be available for civilian traffic, or at least would release ordinary cars for civilian traffic. Priorities have also been assured for locomotives and other motive power. Requirements for the remainder of the year are being surveyed and will be covered by further extension of priority assistance.

Railway transportation will be tight during 1942. Carloadings will be on a high level with limited uses to peak loadings. In other words, the character

of the traffic moving on the railroads has been changed so that a fairly even movement will be seen throughout the year. The traffic peak in June and July occurs during the grain harvest. During the usual fall peak in September and October, livestock and grain are moving in volume.

-- Motortruck Situation --

Early in January production of trucks under 1-1/2 tons was stopped and the supply in the hands of factories and dealers was frozen. These smaller trucks are now being reserved with priorities for military and essential services. Trucks rated at 1-1/2 tons and upward are being manufactured at a level above previous years to be available for both commercial and military use. As a result of these limitation orders, probably no trucks will be available for individual purchasers, although large-sized trucks may be available for common carriers. Shippers without trucks will have to depend upon common carriers for any shipment which must move by motortruck.

Repair parts for trucks were limited in amount of production but the limit has been relatively high. Repair parts are available to distributors and repair shops through the usual channels. Even with the best of distributors' organization, it seems inevitable that delay and many shortages will occur in the distribution of repair parts and their availability to the public.

Coordination of the trucking operations of common and contract carriers is being developed by the Office of Defense Transportation. Objections are smoothing up the traffic flow and conservation of trucks, rubber, and labor.

-- Coastwise and Intercoastal Shipping --

Some coastwise shipping is still in operation. Other shipping has been diverted to foreign routes. Heavier loads are being carried by the carloads.

-- Ocean Shipping --

Unpredictable factors surround ocean shipping. The capacity available for the importation of commodities of interest to agriculture is limited. Agriculture feels the effect in various ways, such as the shortage of burlap, and the limited fertilizer supply, as well as in the increased production goals for a number of agricultural commodities.

-- Tire Rationing --

Agricultural uses for which tires may be obtained are included in the following rationing provisions:

A vehicle which is operated by a farm veterinarian, and which is used principally for professional services.

A vehicle with a capacity of 10 or more passengers operated exclusively for one or more of the following services: (1) Transportation of passengers as part of the services rendered to the public by a regular transportation system;

(2) Transportation of students and teachers to and from school; (3) Transportation of employees to and from any industrial or extractive establishment, power generation or transmission facilities, transportation or communication facilities, construction project or FARM, except when public transportation facilities are readily available.

A truck operated exclusively for one or more of the following purposes: (1) Transportation of raw materials, semi-manufactured goods, and finished products, including FARM PRODUCTS and FOOD, provided that no certificate shall be issued for a tire or tube to be mounted on a truck for transportation of commodities to the ultimate consumer for personal, family, or household use; (2) Transportation of ice and fuel; (3) Transportation of materials and equipment for construction or for mechanical, structural, or highway maintenance or repair; (4) Transportation by any common carrier; (5) Transportation of waste and scrap materials.

Farm tractors or other farm implements other than automobiles or trucks, for the operation of which rubber tires or tubes are essential.

Agricultural uses of tires eligible to apply for retreaded and recapped tires, after the above uses are covered are:

A passenger car used principally to provide one or more of the following transportation services: (1) Licensed jitney, taxi, or similar transportation service to the general public; (2) Transportation of persons to enable them to render construction or mechanical, structural, or highway repair maintenance services; (3) Transportation of executives, engineers, technicians, and workers to and from, or within, such of the following as are essential to the war effort: Power generation or transmission facilities, transportation or communication facilities, or AGRICULTURAL, extractive, industrial, military or naval establishments; (4) Transportation on official business of Federal, State, or local government employees engaged in the performance of government functions essential to the public health, safety, or the war effort; (5) Transportation of produce and supplies to and from the FARM if an applicant operating such farm does not own or possess a truck or other practicable means of transportation; (6) Transportation of travelling salesmen who are engaged in the sale of FARM, extractive, or industrial equipment, FOOD or medical supplies, the distribution of which is essential to the war effort; (7) Transportation of newspapers for wholesale delivery.

Trucks used for any important purpose not included under those eligible for obtaining new tires.

-- Farm Labor --

The drain on farm labor that started with the beginning of the defense production program was accelerated by the outbreak of war and will continue through 1942 and 1943. The areas which will feel the pinch most will be the New England, Middle Atlantic and East North Central States, and areas adjacent to war industries.

Temporarily, the movement from farms may be slowed by priorities unemployment as civilian industries are converted into war production. However, the vast volume of war contracts makes it appear that labor demands of war industrial production cannot be met entirely by transfer of workers. The total labor force for both war industrial production and war agricultural production will have to be expanded by recruitment of persons not normally employed in either phase of our economy.

There is a Government-wide concern about farm labor. The National Selective Service System has made special efforts to stress the importance of agricultural workers, and has arranged for exchange of information between Selective Service Boards and USDA War Boards. The U. S. Employment Service is expanding its offices and farm placement service to provide for orderly and efficient recruiting and placing of farm workers. Farm Labor Subcommittees of State and County Agricultural Planning Committees and the Office of Agricultural Defense Relations are working with farmers and other Governmental agencies in formulating plans for alleviation of farm labor shortages.

In general, three steps can be taken to alleviate the situation:

1. More efficient use of available labor by sharing of labor and farm equipment, directed migration of farm labor, redistribution of the manpower from surplus to deficit areas, and greater farmer use of the Employment Service.
2. Wider use of manpower not ordinarily employed on farms, including older men, young people, women and minority groups.
3. Improvement of wages, housing, and working conditions for farm labor so as to increase the attractiveness of farm work.

BACKGROUND INFORMATION SERIES

1. Information on 1942 Production Goals.
2. More fats and Oils - A Vital Need
3. Dry Edible Beans
4. Chronology of Agriculture's Part in the War
5. Wartime Farm Production Problems

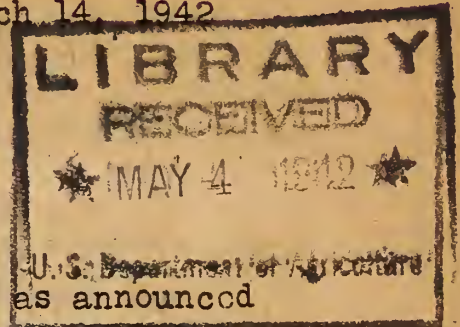
OFFICE OF INFORMATION

UNITED STATES DEPARTMENT OF AGRICULTURE
Washington, D. C.

March 14, 1942

Food For Freedom Program
Background Information Series - No. 6

MORE LONG-STAPLE COTTON NECESSARY



The original agricultural production goals for 1942, as announced in September 1941, made no provision for increased cotton acreage. But the final goals, announced January 16, 1942, provided for roughly a million acres more than had been planted in 1941. To encourage the production of long-staple cotton, additional loan premiums are to be paid on staples of 1-1/8 inch and longer. For while we had ample cotton, and overproduction had plagued us for years, our entrance into the war made production of more long-staple cotton urgent.

The premiums announced for Upland cotton included an increase also for various grades of 1-1/16 and 1-3/32 inches. Extra long-staple cotton, the American-Egyptian and Sea Island types, constitute but a small fraction of our total cotton output -- possibly 62,000 bales in 1941-42 as compared with only 33,000 in 1940-41, and but 12,000 as recently as 1937.

The development of long-staple American-Egyptian cotton in this country came about largely through work of T. H. Kearney of the Department of Agriculture working in cooperation with the States. Most of the American-Egyptian cotton now produced is of the variety known as S x P, a cross of Sakellarides and Pima, though until a year ago it was largely Pima which is a cross between American and Egyptian. Such cotton requires a long growing season and has so far been grown only under irrigation.

-- Military Uses of Long-Staple Cotton --

Cotton with staple lengths of 1-1/8 inches or longer is essential for many war uses. Much of this is required for military uniforms if they are to meet minimum specifications. Present supplies will probably meet such requirements until the 1942 crop becomes available, though the carryover will be smaller than a year ago. Fairly accurate data exists for converting figures for each type of fabric required by the Naval and Military Establishments into quantities of raw cotton, but precise estimates are as yet impossible.

Cotton enters into the fabric used for the control surfaces of combat planes. Training planes, balloon fabrics, flotation gear, machine gun belts, and parachutes all require long-staple cotton. Man-carrying balloons require the finest cotton available and only one or two mills in the country now manufacture the cloth required or are equipped to do so. Parachutes, hitherto made of silk, will now have to be made of non-cotton substitute materials, but cotton is taking the place of linen in parachute lines or shrouds. Military needs also absorb large quantities of sewing thread which is made from combed cotton of 1-1/8 inch staple or longer.

Cotton articles and fabrics for military use are of uniformly high quality. They get hard usage and have short lives. They are purchased on precise specifications, though the quality of the raw cotton to be used in making them is not specified. Instead weight per yard, weave, threads per inch, tensile strength, color, and finish of the fabric are specified.

In the 14-1/2 months prior to November 11, 1941, the Quartermaster Corps ordered more than 150 million yards of cotton cloth for uniforms. This cloth had largely to be made from 1-3/16 inch staple cotton. Tents, tarpaulins, and coveralls are made from short-staple cotton, however. But the Army purchased 4 million rubberized raincoats between September 1, 1940, and November 11, 1941, and they are made on a cotton-lawn base, made in turn from combed long-staple cotton. Heavy-duty tire cord also requires long-staple cotton.

-- Premiums --

These needs explain our increased cotton requirement. Accordingly the Secretary of Agriculture has asked the U.S.D.A. War Boards to survey the seed situation and to help farmers get seed of long-staple varieties, as well as to assemble technical information for them. The Commodity Credit Corporation has announced increased premiums for the longer staple lengths in its 1942 loan programs in order to provide growers with incentive to produce the lengths required.

In order to assure producers of adequate compensation for this increased production the Commodity Credit Corporation has offered to purchase American-Egyptian cotton produced in 1942 at the following prices for cotton with a staple length of 1-1/2 inches:

U.S. Grade No. 1	40¢ per pound
No. 1-1/2	39
No. 2	38
No. 2-1/2	37
No. 3	35

Appropriate premiums and discounts have been established for other staple lengths.

In connection with Sea Island cotton, the Corporation offers to purchase this cotton on the basis of 40¢ per pound for cotton of U. S. Grade No. 2 and a staple length of 1-1/2 inches with appropriate premiums and discounts for other grades and other staple lengths.

-- Acreage and Yield --

For long-staple Upland there is a goal of about 1.4 million bales, or 700,000 more than last year, though it is proposed that growers make the change required within their present acreage allotments simply by shifting to long-staple varieties. Growers of American-Egyptian have been asked to plant 300,000 acres (or 150,000 bales, as compared with 62,000 in 1941) in 1942, and more, if the seed supply permits. The acreage for extra long-staple, Sea Island, is to be somewhat above that for 1941 and three times the 1936-40

average. These cottons are not subject to acreage allotments.

The production of long-staple cotton is limited primarily to certain areas in Mississippi, Arkansas, Louisiana, Missouri, Tennessee, South Carolina, North Carolina, Florida, and the irrigated areas of Texas, Arizona, New Mexico, and California. Production of American-Egyptian cotton has in the past been limited almost entirely to Arizona though some was grown last year in New Mexico and extreme west Texas. The 1941 production of Sea Island was about 2,800 bales as compared with an average of 100,000 in 1916 and 1917, boll weevil infestation being the chief cause of the decline.

Investigation has indicated that yields of long-staple Upland cotton are generally lower than those of shorter staple varieties. Consequently increased premiums have been announced for longer staple cottons of the better grades. Such cotton must be both harvested and ginned with care. Premiums will be on the basis of average market differentials that prevailed during the 1941-42 crop year, plus such addition as is necessary to supply incentive for production of longer staple varieties of lower yield. Location differentials will be based on the relative sales value of cotton in different domestic markets.

-- Cotton Classing Under the Smith-Doxey Act --

In 1937 the Congress amended the Cotton Grade and Staple Statistics Act of 1927 to provide free classing and market news services for members of cotton-improvement groups. This Smith-Doxey Act improves the position of growers of high-quality cotton, and the number of farmers participating has more than doubled each year since 1938. The service is not yet available throughout all the Cotton Belt. Groups wishing to participate in 1942 should apply early. There are Smith-Doxey classing offices now in each of the cotton-producing States, to furnish classing information to producers on forms showing grade, staple length, and preparation of individual bales, as well as to provide market information through mimeographed reports, radio broadcasts, and newspaper articles.

Further extension of the Federal classification system is important to the success of the longer staple campaign. Otherwise the producer lacks a reliable yardstick with which to determine the quality of his cotton and the price it should bring. This tends to penalize producers of high-quality cotton. Practically all cotton is classed eventually, and producers who have not organized themselves to take advantage of the classing services offered lose valuable bargaining power.

-- The Long-Staple Seed Supply --

The chief limiting factor for increasing long-staple production in 1942 will be the seed supply. The U.S.D.A. War Boards are compiling lists of available supplies within each county giving the names and locations of persons from whom seed may be obtained, the quantities available of each variety, the prices asked per ton, and the original sources of the seed. Varieties recommended by the Department include Coker 100 and Wilds in the Southeast; Coker 100, Delfos 531, Delfos 6, Delfos 9252, selected strains of Express and Bobshaw, Stoneville 2B, and Wilds 11 in the Mississippi Valley; and Acala 1517 in the irrigated section.

There are substantial quantities of seed in the hands of individual growers. The best sources of the seed are the large cotton breeders, the one-variety communities, and the certified seed growers. It is important that the source and purity of the seed be determined. For the most part distribution will be through normal channels, in many cases directly from producer to consumer. Since an OPA freezing order prohibits the sale for crushing of American-Egyptian seed suitable for planting, the supply will perhaps be restricted to growers in irrigated areas who have grown such cotton before or who live near farmers who have done so.

Long staple to fill military requirements can be produced if all growers will try to get seed which, under their conditions, will produce a little longer staple than they have been growing. It is very important that seed be treated with mercury dust. This promotes quicker and fuller germination and better stands. Seed treatment is especially beneficial when low-grade seed must be used as may sometimes be the case this year. Great improvement in yield and in income result. Directions for treating seed may be obtained from county agents or at agricultural colleges, or from U.S.D.A Leaflet No. 198 on this subject.

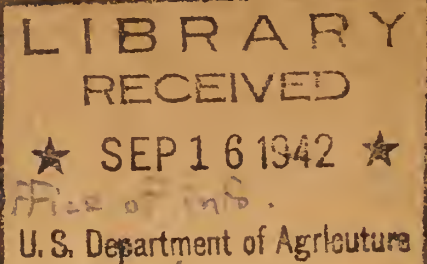
-- Necessity for Careful Picking and Ginning --

To obtain the highest possible grades special care in picking and ginning are enjoined. Careless handling of the crop may lower the grade more than enough to destroy the value of greater staple length. Prompt, frequent, clean hand picking will be required, as well as avoidance of excess moisture and field exposure.

Ginning of longer staple Upland cottons on saw gins requires loose-roll ginning on modernized gin stands with full-diameter saws that have improved teeth. These should operate at from 600 to 700 revolutions per minute. Other ginning requirements are for satisfactory cleaning, suitable drying or conditioning, and uniform pressing and packaging. American-Egyptian and Sea Island cotton should be ginned on roller-type gins exclusively.

BACKGROUND INFORMATION SERIES

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6. More Long-Staple Cotton Necessary



UNITED STATES DEPARTMENT OF AGRICULTURE,
Washington, D. C.

March 20, 1942

Food For Freedom Program
Background Information Series - No. 7

A MUCH LARGER HARVEST OF HAY CROP SEEDS NEEDED IN 1942

The Nation needs increases in hay crop seed harvest in 1942 ranging from 25 percent to as high as 65 percent over 1941.

A larger acreage of cropland is used for forage purposes than for any other one crop except corn. The hay crop production goal for 1942 is 71-1/2 million acres. In addition there are several million acres of rotation pasture grown with hay crop seed which help to furnish the forage supply to produce livestock. Unless seed supplies are available it will not be possible to maintain the hay and rotation pasture acreages of these biennial and perennial crops.

The war emergency requires a marked increase in the production of livestock and livestock products. Forage crops are an important part of the rations for many kinds of livestock. The maintenance of a sufficient acreage of forage crops to supply roughage for livestock is essential in the achievement of livestock production goals. The seed supply for most of these crops available for seeding in 1942 is considered adequate to supply normal demand, but it is imperative that present acreage be maintained in 1943 and after.

In order to maintain the necessary acreage, especially of the biennial and perennial crops, it is essential that farmers plant a normal acreage of these seeds this spring and that adequate seeds be harvested this summer for domestic and Lend-Lease requirements in 1943. It is very important to take care of the present supply of seed to insure a considerable carry-over for planting in 1943.

The suggested goals for harvesting of alsike clover, sweetclover, timothy and lespedeza are about 25 percent larger than the 1941 production. The goal for alfalfa seed to be harvested in 1942 is 65 percent greater than the amount harvested in 1941. For red clover it is 54 percent greater than in 1941.

Basic Data on Principal Small Hay Crop Seeds

Hay Crop	Average annual amount used in seeding, 1936-40 <u>1/</u>	Amount used in seeding, 1941 <u>1/</u>	Seed harvested 1941 <u>1/</u>	Harvesting goal, 1942 <u>1/</u>	Percentage increase over 1941 required
Alfalfa	72,082	87,873	61,026	100,783	65
Red Clover	87,873	123,036	91,512	141,172	54
Alsike clover	22,218	22,531	19,620	25,165	28
Sweetclover	60,955	59,884	49,638	68,040	28
Timothy	65,135	59,856	54,850	63,720	24
Lespedeza	132,242	165,338	169,251	200,000	18

1/ 1,000 pounds

METHODS OF INCREASING THE HARVEST OF HAY CROP SEEDS IN 1942

Alfalfa Seed Production

Alfalfa seed production is most dependable where the climate is relatively dry as in the arid and semi-arid districts of the West. During dry years considerable seed has been harvested in the middle West, particularly in northern Wisconsin, Minnesota, and Michigan. Generally, the crop that matures during the hottest and driest part of the summer is saved for seed. Over most of the country, this is the second crop. South of Kansas it may be the third crop. In the extreme North, it is the first crop.

Where the crop is grown under irrigation, care in applying water is essential. Too much water stimulates rank growth and causes the blossoms to drop. Not enough water causes the blossoms to "burn." In the northern irrigated districts growers either graze the early growth, or remove an early light cutting of hay or cultivate with a spring-tooth harrow to control weeds, thin the stand, and hold back the growth.

Often it is possible to determine the seed prospects by watching the alfalfa at the time of bloom. If the weather is clear and sunny and if the pods are starting to set in abundance, a good yield of seed is in prospect. If the flowers trip -- that is, fall without setting pods -- a poor yield is to be expected.

Alfalfa should be harvested for seed when one-half to two-thirds of the pods have turned brown. Care should be taken to avoid the loss of pods by handling as little as possible. The self-rake reaper and header are the most satisfactory implements to use in harvesting. The ordinary mower equipped with a buncher attachment is also used successfully. The use of the combine makes it necessary to leave the alfalfa standing too long. After cutting, the alfalfa should be left in small shocks until it is dry enough to stack.

Each field is an individual problem and the inexperienced grower should consult the State Experiment Station, County Agent, or an experienced grower for advice on practices that have been found to be most effective for seed production.

Red Clover Seed Production

For increasing red clover seed production emphasis should be given to proper methods of handling to get the most seed possible. In most places the second growth produces more seed than the first growth.

The first crop should be cut when the plants are one-half to three-fourths in bloom. This is 10 days to 2 weeks earlier than normal. A lack of sufficient pollination insects when red clover is blooming is one reason for low seed yields. Honeybees, one of the principal pollinators of red clover, are the only kind that can be readily increased and moved. The placement of one hive of honeybees per acre adjacent to or in a red clover field when blooming will increase seed production.

Losses from improper harvesting and threshing may be large even after a good set of seed is obtained. These losses may be minimized by several precautions. The crop should be cut before shattering occurs from the heads that represent the largest bulk of the seed crop. Cut in the early morning when the heads are damp with dew and stop cutting during the hot part of the day. Windrow the crop either when cutting or when the heads are damp and tough. Combines equipped with pick-up attachments may be used to thresh the seed in the field; however, the use of combines as stationary machines is recommended since rethreshing the straw frequently results in the saving of a considerable quantity of seed. The crop should be handled as few times as possible.

Alsike Clover Seed Production

In increasing alsike seed production from available acreages it is advisable not to graze or harvest the first crop for the largest seed yield. Alsike can be grazed early but as it only makes one growth during the harvest season the first crop is of importance. The placement of one hive of honeybees per acre adjacent to or in an alsike field will materially increase seed production. Care in harvesting operations as given under Red Clover Seed Production should be followed with alsike clover to prevent seed losses.

Sweetclover Seed Production

More sweetclover seed can be saved from available acreages with proper care in handling the crop. Normally, the greatest losses of seed occur after the seed is set; however, lack of sufficient pollination lowers seed yields. Honeybees are the most valuable pollinators. A minimum of one hive of honeybees per acre located close to a blossoming field of sweetclover will increase the quantity of seed set. The early growth of tall, late-growing sweetclover should be either grazed or clipped early, about the middle of May, to reduce the amount and size of the stems. The clipping should not be lower than 8 inches. Under most conditions biennial yellow

and early flowering biennial white should not be clipped or grazed for maximum seed yields. Sweetclover seed matures unevenly and shatters readily. The crop should be cut when the largest amount of seed is mature.

Combines have been used to harvest the seed directly in the field but seed losses are liable to be high unless precautions are taken. If harvested with a grain or corn binder cut in the early morning or late evening when the plants are damp and tough. After the bundles have become thoroughly dry the seed may be threshed with a grain separator or a combine used as a stationary machine.

Timothy and Other Grass Seed Production

In the production of grass seed the cultivation treatments are similar to those generally used for hay and pasture production. It is difficult to increase the seed production on established fields to any great extent. Care should be taken to keep the fields free from weeds or plants which would be difficult to remove or be undesirable in a seed mixture. If the field is used for pasture, the livestock should be removed early in the season or grazing should be deferred until after seed harvest.

To insure a maximum production of high-quality seed, care is essential in harvesting and curing or drying. If the ordinary grain binder is used, the grass should be cut when the seed is in the soft dough stage, or when the heads are turning brown. The binder should be in good mechanical condition. The bundles should be placed in small shocks for curing. Care in threshing is important to prevent seed losses. Under most conditions the concave teeth are removed and the machine is run at a low rate of speed; however, different grasses may require different procedures. When the combine is used the seed should be harvested in a later stage of maturity than when the binder is used, but again care is necessary to prevent loss from shattering. When harvested with a combine seed should be thoroughly cleaned and dried before storing to prevent damage by excessive moisture.

Lespedeza Seed Production

An increase in lespedeza seed production may be brought about through an improvement of methods in handling the crop. On acid soil of low fertility the application of one-half to one ton of lime and 200 pounds of 20 percent superphosphate or its equivalent per acre will result in increased seed yield. Greater seed yields are usually obtained if the crop is not grazed or cut for hay. If it is necessary to pasture or cut for hay before harvesting a seed crop, the hay should be cut unusually early and the pasturing discontinued before midsummer. Losses from seed shattering at harvest time are particularly large with the varieties Kobe, Tennessee 76, and common. The seed crop should be harvested as soon as the crop is mature or immediately following the first killing frost in the fall. Korean lespedeza shatters less rapidly; however, harvesting should not be delayed. As the seed crop is being cut and windrowed a seed pan attached to the cutting bar of the mower will save much of the

shattered seed. Following the windrowing the crop may be either threshed by combines equipped with pick-up attachments or used as stationary machines, or by grain separators.

BACKGROUND INFORMATION SERIES

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UNITED STATES DEPARTMENT OF AGRICULTURE. Office of info.
Washington, D. C.

April 23, 1942

Food for Freedom Program
Background Information Series - No. 8

FARMERS SHOULD PLAN FOR WHEAT STORAGE NOW

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U. S. Department of Agriculture

Farmers in many areas must be prepared to provide more ~~farm storage~~ for wheat. And to make sure of having additional storage space in time for the new crop, materials should be ordered now.

It is expected that farmers will be able to get the materials they will need for the construction of farm storage if they order now. But if they wait until harvest time to order lumber, local lumber dealers may not have sufficient opportunity in some areas to get the necessary supplies in time. A recent WPB order provided for increased production of nails for a four-month period.

-- The Storage Situation --

Almost two-thirds of all warehouse, elevator, and other grain storage space off farms is already filled, and the amount of wheat stored on farms is the largest on record for this time of year. Commercial storage stocks were 28 percent larger on February 16 this year than they were on March 1 last year, and stocks of wheat on farms on April 1 this year were 40 percent larger than at the same time last year.

On February 16 more than 900 million bushels of wheat were on hand -- about 594 million bushels in off-farm storage and about 320 million bushels on farms. The 1942 wheat crop is expected to total about 790 million bushels. Operators of off-farm storage reported that on February 16 they had only 410 million bushels of unoccupied space.

The difference between total off-farm storage capacity, including intended new construction, and total stocks in off-farm storage is about 667 million bushels. But this difference does not represent available space because allowance must be made for working space and for partially filled bins to which, for various reasons, no more grain can be added.

Last year large amounts of wheat were moved to terminal storage points to make local storage space available for the new crop. This year, much less terminal storage space is available. It will not be possible this year to use freight cars for temporary storage. Ore boats on the Great Lakes which formerly carried wheat on the last trip in the fall and were used for temporary storage will be transporting ore on the final trip this year.

Not only will wheat stocks and the new wheat crop be large this year but wheat will have to compete with large supplies of other crops for available storage space. Wheat will have to compete for space with increased

crops of corn, rye, barley, oats, flaxseed, soybeans, grain sorghums, and dry beans.

Still another difficult factor in the storage problem is the shortage of bagging. In California, Oregon, Washington, and Idaho, wheat is normally stored in sacks. This year the shortage of sacks may make it necessary to provide bulk storage for much of the grain that would ordinarily be stored in sacks.

USDA War Boards, local elevator operators, and grain marketing committees will have information on off-farm storage space available in principal grain-producing localities -- and on the necessity for providing additional farm storage space.

There is an extreme shortage of space where wheat can be turned and there is little or no possibility of getting new turning equipment. For this reason, farmers should combine wheat only when moisture content is low enough for storage without drying or turning.

— Storage Allowance Offsets Construction Cost —

The allowance of 7 cents a bushel for storage of wheat under government loan will help offset the cost of new farm storage buildings. Two years of storage at this rate would pay for the average cost of construction. However, the 7-cent storage allowance will not be available for the 1942 crop if wheat marketing quotas are not approved by two-thirds of the farmers voting in the referendum on May 2.

The Farm Credit Administration and the Farm Security Administration can make loans to enable farmers to buy materials for grain storage in advance of the harvesting season. And lumber yards may also provide materials in advance to be paid for with the storage allowance.

The WPB has limited the building of farm structures, without formal authorization, to those costing \$1,000 or less; and steel, other than nails, for such structures will not be available. However, lumber can be obtained if ordered in time and storage for a large amount of wheat can be built for \$1,000.

Critical materials, such as reinforcing steel, corrugated galvanized sheets, and enclosed motors, will not be available for constructing storage facilities at country, subterminal, and terminal points. New building of commercial grain storage without specific authorization from WPB has been limited to structures costing no more than \$5,000 each.

New commercial storage construction planned or underway on February 16 this year totaled about 35,000,000 capacity -- less than half of last year's reported figure of 71,000,000 bushels.

— Grain Marketing Committees at Work —

To facilitate grain storage and transportation, meetings are being held this year at St. Louis, Chicago, Kansas City, Enid, Amarillo,

San Francisco, Portland, Seattle, Ogden, Omaha, Minneapolis, Indianapolis, Columbus, Buffalo, Philadelphia, and Baltimore. All groups interested in marketing, storing and moving the 1942 grain crop attend the meetings and committees are organized, as in 1941, to coordinate the efforts of Government, grain trade interests, and railroads and to acquire and disseminate information.

State and County War Boards are assisting in dealing with marketing, storage, and transportation problems. They are working with the marketing committees and with individual farmers, helping them anticipate their own specific storage needs and plan accordingly.

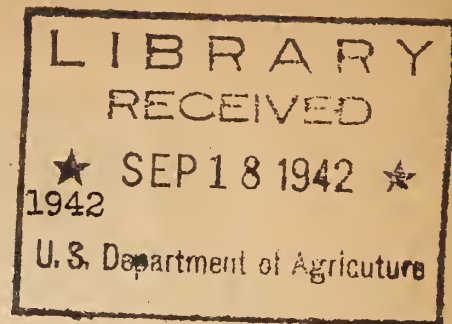
Farmers and feed dealers in deficit feed areas are being encouraged to carry large inventories of feed in order to move stocks out of bulk storage and make more room for 1942 grain. For example, FCA, working with the Grange League Federation in the Northeast, has arranged financing so that this large cooperative can maintain much larger feed stocks, both in its warehouses and on its members' farms.

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UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.



July 6, 1942

Food for Freedom Program
Background Information Series - No. 9

THE COMMERCIAL DEHYDRATION OF FOOD IN WARTIME

Most of the food that we eat consists of water. Eggs and meat are three-fourths water. Some vegetables contain over 90 percent water, and even quite dry-appearing foods contain 10 percent or more of moisture. From this it is easy to see that dehydrated foods have immense wartime significance, for they occupy an average of only one-fourth the space (containers and all) occupied by the nondehydrated product, and weigh only a fourth or a fifth as much. Their use saves shipping space, transportation costs, and much of the tin normally required for packaging.

Dried, sun-dried, evaporated, and dehydrated are the terms most frequently used to describe dried products. The first indicates the removal of the water content by any means whatever and the second implies drying without artificial heat. Evaporation involves the use of artificial heat. But whereas air circulation depends on natural draft in evaporation, dehydration involves the mechanical circulation of artificial heat. Hence in dehydration, temperature, humidity, and the circulation of the air are all rigidly controlled.

We have long produced a large variety of dried fruits and vegetables, notably beans, peas, raisins, apples, prunes, peaches, apricots, and pears. Drying was here used largely to preserve the product, such preservation of food being far from a new idea with the North American Indians and other even more primitive peoples. Indians in the Arizona region, for instance, have not had to be taught much about the use of dried foods as they have been long familiar with "jerky" beef, dried corn, and other dried vegetables.

The water content of dried fruits usually ranges between 20 and 25 percent, and of dried vegetables between 10 and 15 percent. Properly dehydrated foods generally contain less than 7 percent of moisture, and usually about 5, sometimes as low as 3 1/2 percent. In general, it takes about 10 pounds of fresh vegetables to make 1 pound of dehydrated, about 11 pounds of liquid milk to make 1 pound of dried skim, about 3 dozen fresh shell eggs to make 1 pound of dried, and about 4 pounds of raw, lean meat to make 1 pound of the dehydrated product.

The armed forces of the United States plan to purchase millions of pounds of dehydrated vegetables this year. In the main, these will be potatoes, cabbages, onions, carrots, sweetpotatoes, beets, and rutabagas. It is estimated that the elimination of excess water from potatoes alone will soon save the Army shipping space equivalent to that in two large freighters.

Up to the end of May 1942, approximately 2 million pounds of dehydrated vegetables had been purchased for Lend-Lease. With increased production being encouraged, additional large quantities will be bought for this purpose. To date, Lend-Lease purchases have largely represented dehydrated dairy and

poultry products (mostly dried skim and whole milk and dried eggs). On July 1, 1942, the Department of Agriculture announced it would purchase quantities of dehydrated meat for Lend-Lease shipment.

In 1940 the Nation produced only 6 million pounds of dried vegetables. This rose to approximately 15 million pounds in 1941 and will go much higher this year as capacity improves. In view of our shortages of tin and other containers the U. S. Department of Agriculture, working with the War Production Board and the Army Quartermaster Corps, is seeking rapidly to expand our dehydration facilities. For one ship can carry as much food value in dehydrated products as nine ships could of commodities in their natural form. Plans are now under way to dehydrate many more kinds of food.

During the first World War 8,905,158 pounds of dehydrated vegetables were shipped to the United States Army overseas, but 6,437,000 pounds of this were potatoes, and soup mixture accounted for another 1,860,000 pounds. Because many commercial concerns went into the dehydration business poorly equipped and with little understanding of the problems involved, dehydrated food was not a great success at that time.

But fundamental research then began by Department scientists and the results, embodied in Circular 619, The Preservation of Fruits and Vegetables by Commercial Dehydration, by E. M. Chace, W. A. Noel, and V. A. Pease, are still followed closely in commercial practice. The existence of this research - and it was largely published as early as 1921 - gave us a head start when commercial dehydration was undertaken in the present war.

But the commercial dehydration of food is not a business to be carelessly undertaken. In general it requires equipment and control quite as specialized as does canning, and the successful operation of a dehydration plant is even more difficult than that of a cannery or of a quick-freezing establishment. Any concern undertaking dehydration in the lack of skilled and experienced direction will undoubtedly suffer losses till the business is learned. What is more important today, this will mean wastage of food that cannot be spared.

Access to crops of good quality is of first importance. Cannery usually have long-time arrangements with growers for their supplies. Dehydrated foods must also meet rigid specifications to make them eligible for purchase for Lend-Lease shipment or use by the armed forces. The business cannot be started on a shoe-string, and an output of at least a half million pounds yearly is necessary for profitable operation, depending, however, on the investment involved in the plant.

The Department of Agriculture is actively seeking to aid canners and other food processors whose operations are curtailed because of tin conservation and other restrictions, thus enabling them to enter the dehydration field. Blueprints of dehydrator set-ups for plants of different capacities, and mimeographed technical material giving information on the dehydration of specific vegetables, are being made generally available by the Department.

Fundamental research on the commercial dehydration of foods is being carried on jointly by the Bureaus of Agricultural Chemistry and Engineering, Animal Industry, Dairy Industry, and Home Economics. Practical advice and guidance are being given commercial plants by Department specialists in various fields. Selected panels of Department people test dried foods for palatability and general acceptability. Production expansion is being encouraged through purchases of the Agricultural Marketing Administration for Lend-Lease shipment and other distribution needs.

Methods must be used in dehydrating that prevent the loss of minerals, vitamins, other nutritive value, color, and flavor. Dehydrated foods must be produced which stand storage, sometimes under drastic conditions, without undue deterioration, which will ship well, and will closely resemble fresh food when finally reconstituted.

The right variety of raw material must be chosen for successful dehydration. It must have been grown properly, it must have been harvested or slaughtered at the proper time, it must be prepared promptly for dehydration, and skilled attention must be given to the preparation, dehydration, packaging, and storage of the product. The main steps in preparing fruits and vegetables for dehydration are washing, grading for size, peeling, trimming, checking, subdividing, pitting and seeding, blanching, and traying.

High-quality dehydrated food can be made only from high-quality raw material. Dehydration offers no magic to grade up low-quality products.

-- Fruits and Vegetables --

Pretreatment is necessary to make presentable dehydrated foods of good keeping quality from light-colored fruits and vegetables. The processing or blanching agent for vegetables is mostly steam, though hot water is used somewhat. Light-colored fruits are usually sulfured before dehydrating. The blanching inactivates the peroxidases, the enzymes or ferments which are very necessary to the normal life of plants, but damaging to their quality as foods if permitted to continue activity after harvesting and storing. Potatoes and carrots are usually water-blanching in Canada, while turnips and cabbage are quite generally steam-blanching. Steam blanching is used almost exclusively in the United States. This stops all life processes.

Dehydrated vegetables are usually packaged for lend-lease and the armed forces in 5-gallon tins with press-in lids which are spot-soldered on. Inert atmospheres are considered necessary to promote satisfactory storage for some of these commodities, either commercial nitrogen or carbon dioxide. All cabbage, turnips, and carrots processed in Canada for government order are packed in metal containers in which the air has been replaced with nitrogen or carbon dioxide. In the United States carrots and cabbage are so far packed in this way.

The yield for most vegetables is from 4 to 14 percent of the fresh, unprepared product, though this runs as high as 18 percent in parsnips and from 17 to 21 percent for potatoes. While rhubarb may yield but 2 percent of the fresh prepared product as dehydrated food, the yield of most dehydrated-fruits and berries averages about 15 percent of the fresh unprepared product.

To take a specific instance: 6 crates of carrots weigh about 198 pounds. They arrive at the dehydration plant fresh-pulled - not more than an hour old. They are then topped, trimmed, washed, scraped, and cut into 1/4 inch disks which are spread evenly over wire trays. They are next exposed to steam for 6 minutes to blanch, and are then placed in the dehydrator at 150° - 180° F. It takes from 1 to 4 hours to dehydrate different vegetables in these. The yield from the 198 pounds of carrots is 17 pounds of dehydrate, enough to fill two 5-gallon cans. A bit of solid carbon dioxide is dropped in and the lids are sealed on with shellac. In similar manner two heads, or 4 pounds of cabbage, shrink to a 6-ounce disk, the shredded cabbage having been compressed into the disk when containing about 20 percent of moisture in order to save space in the driers.

-- Soup --

More than 6 million pounds of dehydrated soup have also been bought for Lend-Lease, and over half a million pounds of dehydrated tomato flakes. Much of this is manufactured by spraying cooked and pulped vegetables on hot revolving drums where the water quickly evaporates. The dried product then peels off the drums like paper, is crumbled into flakes, and these later become soup when water and seasoning are added.

Fruits and vegetables are usually dried in tunnel-type driers. Drum (or rotary) and spray driers have been used for liquid products in the past, though meat can be dried on the former.

-- Apples --

Considerable quantities of dehydrated, as distinguished from dried, apples are now being made commercially in this country and bought by the Army. Rome Beauty, Baldwin, and Stayman Winesap varieties have been found ideal for making this product. The dehydrated product weighs only one-seventh as much as the raw apples and can be reconstituted readily to make apple sauce, pie filling, or fruit for eating with cereal. The product is superior in flavor to dried fruit. It keeps well and does not go sour. Dehydrated apple is being packed in airproof, 5-gallon, black-metal cans, and is the only dehydrated fruit being purchased by the Army except lemons.

-- Citrus Fruit Juice Concentrates --

For lemon juice also is essentially dehydrated and then mixed with 80 percent of corn sugar to form a powder. This readily reconstitutes with the addition of water. The dehydration of citrus fruit juice and the manufacture of citrus fruit juice concentrates are now important industries.

The juice of 25 cases of oranges can be reduced to one small case of concentrate. One part of the concentrated juice of California oranges requires 8 parts of water, and one part of concentrated Florida orange juice 10 parts of water for reconstitution. To date 1,200,000 gallons of such concentrate have been shipped on Lend-Lease to be reconstituted to about 9,600,000 gallons of orange juice when water is added.

In making the concentrate, juice from fresh oranges is evaporated under reduced pressure. Whereas the fresh product contains from 10 to 15 percent of total solids, the concentrate ends up with 65 to 70 percent. The vitamin C content is reduced only slightly. Ordinarily the juice is pasteurized during

processing, but nothing is added, neither sugar nor preservatives. Cull oranges are used in manufacturing the concentrate, i.e., fruit that is misshapen or blemished, but wholesome, and of which the juice is excellent.

The concentrate offers a practical source of vitamin C, just as does the original juice. Pharmaceutical houses in Great Britain pack the juice in 6-ounce bottles, after it has been blended and standardized, and distribute it to food centers throughout the British Isles. The 6-ounce bottle is calculated to last a given time and the family is rationed. The juice is diluted with water, or reconstituted, at home.

-- Eggs --

Outstanding in the dehydrated-food field is the egg-drying industry. Eggs consist of water to the extent of 75 percent. Purchases for Lend-Lease totaled 157 million pounds of dried eggs from April 15, 1941, to May 1, 1942, and purchases to the end of 1942 will probably total 200 million pounds. There are approximately 80 drying plants now operating throughout the United States with an annual capacity of 285 million pounds, though the 18 plants in operation in 1940 had a normal operating capacity of only 10 million pounds.

The rate of production here has been stepped up from 10 million pounds annually, the normal in earlier years, to 300 million pounds anticipated this year, meaning that we must break about 10 billion eggs or 30 million cases for this purpose. Originally the dried eggs were packaged in 300-pound drums but small moisture- and vapor-proof packages have been found better. Such a 5-ounce package represents a dozen shell eggs. A case of 30 dozen shell eggs weighs about 58 pounds and occupies 2 cubic feet of space while the same eggs when dehydrated weigh only 11 pounds and occupy less than half a cubic foot.

Three general methods of drying eggs are used - the spray, tray, and belt. In the first the eggs are sprayed under pressure into the upper part of a high-ceiling chamber heated to a temperature of 160° to 170° F. The second method involves drying in metal trays in specially constructed cabinets through which hot air is forced. By the third method a thin film of liquid egg travels on an endless belt which traverses a warm chamber through which filtered air, heated to about 140° F., circulates. Before using any of the methods the eggs are broken, strained, and emulsified.

In order to aid the egg-drying industry in getting "bugs" out of its techniques a perambulating laboratory has been set up by the U. S. Department of Agriculture. This will travel from plant to plant and endeavor to solve problems that arise in processing. Analyses and other investigations will be made and operatives advised as to what changes in their procedure are necessary to enable them to obtain a good product regularly.

The dried eggs can not only be used in cakes, doughnuts, pancake flours, and noodles, but also serve well for scrambling or making omelets. Yet up to 1925 practically all the dried eggs used in this country came from a few large egg drying centers in China. As the Chinese eggs were smaller, it took more to produce a pound of liquid egg than from those in this country.

Aside from the uses noted above, dried eggs are used also in baking powder, candies, whipping powders, paper sizing, dyeing and sizing materials for

silks, cotton, and rayon fabrics, the glazing of leather products and furs, body pigments for special varnishes, the gluing of cork on bottles and jar caps, and adhesive for gold leaf, the emulsification of certain pharmaceutical products, the clarification of wine and beer, lithographing and photoengraving, tanning light leathers, and as an emulsifying agent in alum.

— Milk —

Originally evaporated or condensed milk was purchased heavily for Lend-Lease shipments. But one ship will carry as much food value in the form of powdered milk as four will in the form of evaporated. The call came then from the United Nations for increased shipments of powdered milk, the spray-process powder being preferable because it converts more naturally.

At first dry skim milk was purchased for shipment because whole-milk powder did not keep well. But basic research on milk fats, performed by Department scientists, has shown how a whole-milk powder that keeps well may be produced. Some of this was actually shipped abroad in fiber containers without deterioration, though tin is better. At present substantial quantities of dried whole milk powder are purchased as a result of offers by the industry made every Wednesday.

More than 209 million pounds of dry skim milk were bought March 1941 through June 1942, but three-fourths of it was roller-processed. Since March 1941 only about 5 million pounds of whole-milk powder have been purchased, and such purchases were irregular until recently. The 1942 production goal of dry skim milk for human consumption is 569 million pounds. In April the actual rate of production of the latter was 575 million pounds, on an annual basis. Dried whole milk will be shipped increasingly, however, since the method of making it ~~has~~ improved.

The problem here is that of protecting milk fat or butterfat from rancidity. Careful research by Department of Agriculture scientists has shown that if fresh milk is promptly processed the keeping quality of the resultant powder is excellent. It is also very necessary to protect the product from oxidizing agents. This is likewise true of dehydrated butter.

-- Butter --

Dehydrated butter (or pure butter oil) is made by melting, floating off the fat, and vacuum-drying it. Removal of the water itself tends to prevent adverse bacterial and chemical activity which brings on rancidity. But the gas must also be removed from the fat to prevent oxidation. Vacuum-drying in pans or with agitation accomplishes this. Packing either dehydrated whole milk or butter oil in inert atmospheres may be rendered unnecessary if the products are made properly.

Butter oil keeps well when properly made, even at room temperature. It can be used directly for cooking, or reconstituted into butter by the addition of water and salt. The fact that it can be shipped without refrigeration is important in wartime. The Government is not purchasing dehydrated butter.

-- Cheese --

Cheese, which normally contains over 30 percent of water, has also been dehydrated. The product comes in the form of a flour. When water is added it can be made into a cake resembling processed cheese. The Government is not buying dehydrated cheese.

-- Meat --

The process for the successful dehydration of meat has not yet been fully perfected, but an excellent product has already been turned out. Let it be said at the onset that this so far comes neither in the form of miniature steaks or chops, though it may in the future, nor are whole sides of beef dehydrated as such. The meat is cut in fairly small pieces before dehydration or sometimes ground to hamburger consistency.

Here, as is the case with other foods, the dehydrator must start with a good product in order to end up with a good one. Low-quality raw material can never be processed into a high-quality dehydrated product, and grinding meat to hamburger consistency before dehydration sometimes tempts the processor to use low-grade cuts and meat full of gristle and stringy ligaments.

For dehydrating, fresh beef (or pork) is cut from the bone. Masses of fat are also dissected away, though from 20 to 30 percent of fat has been found permissible in experimental batches. The meat is next sliced into chunks and is then put through a sausage mill equipped to grind it into pieces about 1-1/8 inches in diameter. The material is now ready for dehydration.

In the current experiments of the Department, the ground meat is thrown between two heated drums which slowly revolve towards one another but do not quite meet. They are set one-eighth inch apart. The drums are hollow and there is 100 pounds of steam pressure with a temperature of 337° F. inside. They usually make a complete revolution in less than a minute. The meat is in actual contact with the heated drums for from 40 to 60 seconds in different experimental batches.

This treatment not only cooks, coagulates, and shreds the meat, but also acts as a blanching process and partially dehydrates it as well. Within three-quarters of a minute the meat loses from 45 to 50 percent of its water content. Scrapers automatically remove the cooked meat from the revolving drums and it falls into trays beneath. From these it is transferred to other mesh-bottomed trays which are slipped into a cabinet drier for two to three hours at 160° F. The water content of the meat is now reduced to 5 percent and it is ready to be canned.

The final product occupies about half the volume of the original raw meat and weighs about one-fourth as much. It can be still further compressed in packing if desired. The exposure to heat has inactivated all enzymes present and killed the bacteria. From 20 pounds of fresh meat, 5.3 pounds of dehydrated were produced in one run. That would mean that the ordinary steer yielding 354 pounds of lean beef would yield about 88-1/2 pounds of dehydrate.

The product is palatable for the satisfaction of hunger eaten without preparation, but to reconstitute it two or three parts of water are added. The product stands in this water for 1 hour, after which it is boiled vigorously for ten minutes and simmered for 20 more. Subsequent cooking depends on the type of dish to be prepared. The meat can be used for meatloaf, in hamburger, or to make stew. So prepared the dehydrated product gives the person who eats it something really to chew on. Dehydrated meat contains from 55 to 78 percent of protein, depending on the amount of fat present, and is a good source of the Vitamin B complex, iron, phosphorus, and copper.

Further experimentation is still under way on cooking and drying temperatures and equipment, the permissible fat and moisture content of the raw material, and on the keeping quality of the product when stored under variable conditions - at 0°, 35°, and 110° F., and at room temperature. Once more the fat is a constituent that may become rancid unless carefully handled. Samples of dehydrated meat are also being tested in Department laboratories for moisture and fat content, changes in protein, mineral, and vitamin content, and other qualities, after storage. Feeding to laboratory animals is part of the procedure. Samples are also submitted to cooking and eating tests by experienced judges of meat quality. Many problems remain to be solved, but it has been proved that a satisfactory product can be turned out. The use of dehydrated meat for Lend-Lease shipment will round out the purchase program of other dehydrated commodities carried on by the Agricultural Marketing Administration.

-- Location of Dehydrating Plants --

To date the greatest concentration of vegetable dehydration plants has been in California, but the plants now begin to extend into Idaho, Colorado, Washington, and Oregon, as well as into some Eastern States, particularly New York, Maine, and also a few in the South, like Texas.

Orange juice concentrate is prepared mostly in Florida and California. That prepared for Lend-Lease equipment is usually processed in Florida.

Greatest concentration of egg-drying plants is in the mid-west, on a line running north from the east-center of Texas up through the grain belt. There are also a number of plants along the Mississippi Valley from Louisiana on up. Plants also are operating in the poultry regions of Washington and Oregon on the west coast, and as far east as Pennsylvania and New York.

Dried-milk production centers, reasonably enough, in the major dairy areas of Minnesota and Wisconsin, Michigan, and other Lake States, and in the great eastern milk-shed, New York, Pennsylvania, and Vermont, and in California, Washington, Oregon and Utah in the far west.

-- Dried Foodstuffs in Great Britain --

The London Letter of the Journal of the American Medical Association for June 13, 1942, had this to say on the importance of dried foodstuffs in Great Britain:

"In a series of lectures on planned nutrition in wartime, Prof. J. C. Drummond called attention to the importance of dried foodstuffs. Recently the Low Temperature Research Station at Cambridge produced experimental batches of dried vegetables containing about 80 percent of the original vitamin content of the fresh vegetable. The vitamin loss from exposure to air had been prevented by packing the dried product in inert gas. Thus dried vegetables could be kept indefinitely at the full vitamin value of the material as put in the container. In the case of meat the Cambridge experiments resulted in a product which, on addition of water, was reconstituted so as to be practically indistinguishable from a cooked mincemeat and served in the form of rissoles and the like. The product also maintained its character for several years when kept in a gas pack and was a great advance on anything heretofore produced as dried meat. A combination of dried vegetables and meat in the form of powder has also been produced and on addition of hot water gives a palatable soup. Professor Drummond thinks that the drying of foodstuffs will become as important as the canning industry has been during the last thirty years. The dried product, when reconstituted, is similar in palatability to the fresh material, while the vitamin content and other materials specially valuable in wartime nutrition are preserved."

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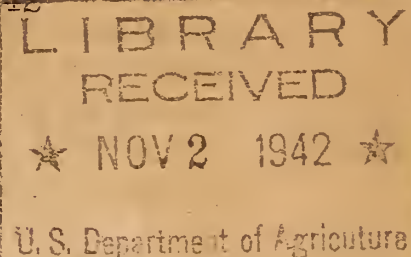
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UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

July 6, 1942

Food for Freedom Program
Background Information Series - No. 9 (Revised Sept. 15, 1942)

THE COMMERCIAL DEHYDRATION OF FOOD IN WARTIME



Most of the food that we eat consists of water. Eggs and meat are three-fourths water. Some vegetables contain over 90 percent water, and even quite dry-appearing foods contain 10 percent or more of moisture. From this it is easy to see that dehydrated foods have immense wartime significance, for they occupy an average of only one-fourth the space (containers and all) occupied by the non-dehydrated product, and weigh only a fourth or a fifth as much. Their use saves shipping space, transportation costs, and much of the tin normally required for packaging.

Dried, sun-dried, evaporated, and dehydrated are the terms most frequently used to describe dried products. The first indicates the removal of the water content by any means whatever and the second implies drying without artificial heat. Evaporation involves the use of artificial heat. But whereas air circulation depends on natural draft in evaporation, dehydration involves the mechanical circulation of artificial heat. Hence in dehydration, temperature, humidity, and the circulation of the air are all rigidly controlled.

We have long produced a large variety of dried fruits and vegetables, notably beans, peas, raisins, apples, prunes, peaches, apricots, and pears. Drying was here used largely to preserve the product, such preservation of food being far from a new idea with the North American Indians and other even more primitive peoples. Indians in the Arizona region, for instance, have not had to be taught much about the use of dried foods as they have been long familiar with "jerky" beef, dried corn, and other dried vegetables.

The water content of dried fruits usually ranges between 20 and 25 percent, and of dried vegetables between 10 and 15 percent. Properly dehydrated vegetables generally contain less than 7 percent of moisture, and usually about 5, sometimes as low as 3 1/2 percent. In general, it takes about 10 pounds of fresh vegetables to make 1 pound of dehydrated, about 11 pounds of liquid milk to make 1 pound of dried skim, about 3 dozen fresh shell eggs to make 1 pound of dried, and about 4 pounds of raw, lean meat to make 1 pound of the dehydrated product.

The armed forces of the United States plan to purchase millions of pounds of dehydrated vegetables this year. In the main, these will be potatoes, cabbages, onions, carrots, sweetpotatoes, beets, and rutabagas.

Up to August 1, 1942, approximately 3 1/2 million pounds of dehydrated vegetables had been purchased for Lend-Lease. With increased production being encouraged, additional large quantities will be bought for this purpose. To date, Lend-Lease purchases have largely represented dehydrated dairy and poultry products (mostly dried skim and whole milk and dried eggs). The Department of Agriculture recently made its first purchase of dehydrated meat and has announced it will buy more this fall and winter for the Allied Nations and other requirements.

In 1940 the Nation produced only 6 million pounds of dried vegetables. This rose to approximately 15 million pounds in 1941 and will go much higher this year as capacity improves. In view of our shortages of tin and other containers the U. S. Department of Agriculture, working with the War Production Board and the Army Quartermaster Corps, is seeking rapidly to expand our dehydration facilities. For one ship can carry as much food value in dehydrated products as nine ships could of commodities in their natural form. Plans are now under way to dehydrate many more kinds of food.

During the first World War 8,905,158 pounds of dehydrated vegetables were shipped to the United States Army overseas, but 6,437,000 pounds of this were potatoes, and soup mixture accounted for another 1,860,000 pounds. Because many commercial concerns went into the dehydration business poorly equipped and with little understanding of the problems involved, dehydrated food was not a great success at that time.

But fundamental research then began by Department scientists and the results, embodied in Circular 619, The Preservation of Fruits and Vegetables by Commercial Dehydration, by E. M. Chace, W. A. Noel, and V. A. Pease, are still followed closely in commercial practice. The existence of this research-and it was largely published as early as 1921 - gave us a head start when commercial dehydration was undertaken in the present war. Part of the detailed instructions in this publication have been superseded by mimeographed information sheets (A.C.E. 163-172) based on the results of current investigations.

But the commercial dehydration of food is not a business to be carelessly undertaken. In general it requires equipment and control quite as specialized as does canning, and the successful operation of a dehydration plant is even more difficult than that of a cannery or of a quick-freezing establishment. Any concern undertaking dehydration in the lack of skilled and experienced direction will undoubtedly suffer losses till the business is learned. What is more important today, this will mean wastage of food that cannot be spared.

Access to crops of good quality is of first importance. Cannerys usually have long-time arrangements with growers for their supplies. Dehydrated foods must also meet rigid specifications to make them eligible for purchase for Lend-Lease shipment or use by the armed forces. The business cannot be started on a shoe-string, and an output of at least a half million pounds yearly is necessary for profitable operation, depending, however, on the investment involved in the plant.

The Department of Agriculture is actively seeking to aid canners and other food processors whose operations are curtailed because of tin conservation and other restrictions, thus enabling them to enter the dehydration field. Blue-prints of dehydrator set-ups for plants of different capacities, and mimeographed technical material giving information on the dehydration of specific vegetables, are being made generally available by the Department.

Fundamental research on the commercial dehydration of foods is being carried on jointly by the Agricultural Research Administration through the Bureaus of Agricultural Chemistry and Engineering, Animal Industry, Dairy Industry, and Home Economics. Practical advice and guidance are being given commercial plants by Department specialists in various fields. Selected panels of Department people test dried foods for palatability and general acceptability. Production ex-

pansion is being encouraged through purchases of the Agricultural Marketing Administration for Lend-Lease shipment and other distribution needs.

Methods must be used in dehydrating that prevent the loss of minerals, vitamins, other nutritive value, color, and flavor. Dehydrated foods must be produced which stand storage, sometimes under drastic conditions, without undue deterioration, which will ship well, and will closely resemble fresh food when finally reconstituted.

The right variety of raw material must be chosen for successful dehydration. It must have been grown properly, it must have been harvested or slaughtered at the proper time. It must be prepared promptly for dehydration, and skilled attention must be given to the preparation, dehydration, packaging, and storage of the product. The main steps in preparing fruits and vegetables for dehydration are washing, grading for size, peeling, trimming, checking, subdividing, pitting and seeding, blanching, and traying.

High-quality dehydrated food can be made only from high-quality raw material. Dehydration offers no magic to grade up low-quality products. It must be recognized, too, that no existing method of food preservation gives a product identical in color, flavor, or palatability with the "garden-fresh" food. However, when re-hydrated without the use of excessive amounts of water, and then cooked under average conditions, the resulting dish on the consumer's table will be nutritious and at least reasonably satisfactory, and up to the quality of that generally eaten.

-- Fruits and Vegetables --

Pretreatment is necessary to make dehydrated foods of good keeping quality. The processing or blanching agent for vegetables is mostly steam, though hot water is used somewhat. Light-colored fruits are usually sulfured before dehydrating. The blanching inactivates the peroxidases, the enzymes or ferments which are very necessary to the normal life of plants, but damaging to their quality as foods if permitted to continue activity after harvesting and storing. Potatoes and carrots are usually water-blanching in Canada, while turnips and cabbage are quite generally steam-blanching. Steam blanching is used almost exclusively in the United States. This stops all life processes.

Dehydrated vegetables are usually packaged for lend-lease and the armed forces in 5-gallon tins with press-in lids which are spot-soldered. Inert atmospheres, either nitrogen or carbon dioxide, are considered necessary to promote satisfactory storage for some of these commodities. All cabbage, turnips, and carrots processed in Canada for government order are packed in metal containers in which the air has been replaced with nitrogen or carbon dioxide. In the United States carrots and cabbage are so far packed in this way.

The yield for most vegetables is from 4 to 14 percent of the fresh, unprepared product, though this runs as high as 18 percent in parsnips and from 17 to 21 percent for potatoes. While rhubarb may yield but 2 percent of the fresh prepared product as dehydrated food, the yield of most dehydrated fruits and berries averages about 15 percent of the fresh unprepared product.

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To take a specific instance: 6 crates of carrots weigh about 198 pounds. They arrive at the dehydration plant fresh-pulled - not more than an hour old. They are then topped, trimmed, washed, scraped, and cut into 1/4 inch disks which are spread evenly over wire trays. They are next exposed to steam for 4 minutes to blanch, and are then placed in the dehydrator at 150° - 180° F. It takes from 1 to 4 hours to dehydrate different vegetables in these. The yield from the 198 pounds of carrots is 17 pounds of dehydrate, enough to fill two 5-gallon cans. A bit of solid carbon dioxide is dropped in and the lids are sealed on with shellac. In similar manner two heads, or 4 pounds of cabbage, shrink to a 5-ounce disk, the shredded cabbage having been compressed into the disk when containing about 12 percent of moisture in order to save space in the driers. It is necessary, of course, to dry the compressed cabbage further so that the final moisture content will not exceed 4 percent when the product is ready to be packed in the container.

-- Soup --

Up to August 1, more than 7 million pounds of dehydrated soup have also been bought for Lend-Lease, and well over half a million pounds of dehydrated tomato flakes. Much of this is manufactured by spraying cooked and pulped vegetables on hot revolving drums where the water quickly evaporates. The dried product then peels off the drums like paper, is crumbled into flakes, and these later become soup when water and seasoning are added.

Fruits and vegetables are usually dried in tunnel-type driers. Drum (or rotary) and spray driers have been used for liquid products in the past, though meat can be dried on the former.

-- Apples --

Considerable quantities of dehydrated, as distinguished from dried, apples are now being made commercially in this country and bought by the Army. Rome Beauty, Baldwin, and Stayman Winesap varieties have been found ideal for making this product. The dehydrated product weighs only one-seventh as much as the raw apples and can be reconstituted readily for apple sauce, pie filling, or other uses. The product is superior in flavor to dried fruit. It keeps well and does not go sour. Dehydrated apple is being packed in airproof, 5-gallon, black-metal cans, and is the only dehydrated fruit being purchased by the Army except lemon.

-- Citrus Fruit Juice Concentrates --

Lemon juice can be dehydrated, mixed with a carrier (generally a high dextrin corn sirup), to form a powder. This readily reconstitutes with the addition of water. The dehydration of citrus fruit juice and the manufacture of citrus fruit concentrates are now important industries.

The juice of 25 cases of oranges can be reduced to one small case of concentrate. One part of the concentrated juice of California oranges requires 8 parts of water, and one part of concentrated Florida orange juice 10 parts of water for reconstitution. About 1½ million gallons of such concentrate has been purchased to be reconstituted to about 12 million gallons of orange juice when water is added.

In making the concentrate, juice from fresh oranges is evaporated under reduced pressure. Whereas the fresh product contains from 10 to 15 percent of total solids, the concentrate ends up with 65 to 70 percent. The vitamin C content is reduced only slightly. Ordinarily the juice is flash-pasteurized before concentration, but nothing is added, neither sugar nor preservatives. Cull oranges are used in manufacturing the concentrate, i.e., fruit that is mis-shapen or blemished, but wholesome, and of which the juice is excellent.

The concentrate offers a practical source of vitamin C, just as does the original juice. Pharmaceutical houses in Great Britain pack the juice in 6-ounce bottles, after it has been blended and standardized, and distribute it to food centers throughout the British Isles. The 6-ounce bottle is calculated to last a given time and the family is rationed. The juice is diluted with water, or reconstituted, at home.

-- Eggs --

Outstanding in the dehydrated-food field is the egg-drying industry. Eggs consist of water to the extent of 75 percent. Purchases for Lend-Lease totaled nearly 230 million pounds of dried eggs from April 15, 1941, to September 1, 1942, and purchases to the end of 1942 will probably total 250 million pounds. There are approximately 85 drying plants now operating throughout the United States with an annual capacity of 315 million pounds, though the 16 plants in operation in 1940 had a normal operating capacity of only 10 million pounds.

The rate of production here has been stepped up from 10 million pounds annually, the normal in earlier years, to 300 million pounds anticipated this year, meaning that we must break about 10 billion eggs or 30 million cases for this purpose. Originally the dried eggs were packaged in 300-pound drums but small moisture- and vapor-proof packages have been found better. Such a 5-ounce package represents a dozen shell eggs. A case of 30 dozen shell eggs weighs about 58 pounds and occupies 2 cubic feet of space while the same eggs when dehydrated weigh only 11 pounds and occupy less than half a cubic foot.

Two general methods of drying eggs are used - the spray and tray. In the first the eggs are sprayed under pressure into the upper part of a high-ceiling chamber heated to a temperature of 160° to 170° F. The second method involves drying in metal trays in specially constructed cabinets through which hot air is forced. Before using any of the methods the eggs are broken, strained, and churned.

In order to aid the egg-drying industry in getting "bugs" out of its techniques a traveling laboratory has been set up by the U. S. Department of Agriculture. This will travel from plant to plant and endeavor to solve problems that arise in processing. Analyses and other investigations will be made and operatives advised as to what changes in their procedure are necessary to enable them to obtain a good product regularly.

Dried eggs can not only be used in cakes, doughnuts, pancake flours, and noodles, but may also be used for scrambling or making omelets. Yet up to 1925 practically all the dried eggs used in this country came from a few large egg drying centers in China.

Aside from the uses noted above, dried eggs, whole or as whites or yolks, are used also in baking powder, candies, whipping powders, paper sizing, dyeing and sizing materials for silks, cotton and rayon fabrics, the glazing of leather products and furs, body pigments for special varnishes, the glueing of cork on bottles and jar caps, and adhesive for gold leaf, the emulsification of certain pharmaceutical products, the clarification of wine and beer, lithographing and photoengraving, tanning light leathers, and as an emulsifying agent in alum.

-- Milk --

Originally evaporated milk was purchased heavily for Lend-Lease shipments. But one ship will carry as much food value in the form of powdered milk as four will in the form of evaporated. The call came then from the United Nations for increased shipments of powdered milk, the spray-process being preferred because the product converts more naturally.

More than 238 million pounds of dry skim milk were bought March 1941 to August 1, 1942, but the largest percentage of it was roller-processed. The 1942 production goal of dry skim milk for human consumption is 569 million pounds. The rate of production is about 600 million pounds, on an annual basis.

At first dry skim milk powder was purchased for Lend-Lease shipment because whole-milk powder did not keep well. But basic research on milk fats, performed by the Bureau of Dairy Industry, has contributed information for the production of dried whole milk of improved quality. This research showed that if fresh milk is promptly processed the keeping quality of the powder is prolonged. It showed also that the product should be packaged so that it will be protected from oxidizing agents. Packaging whole-milk powder in an atmosphere of inert gas will retard but may not prevent spoilage. Some whole-milk powder has been shipped abroad in fiber containers without deterioration, though tin is better.

At present substantial quantities of dried whole milk powder are purchased as a result of offers by the industry made every Wednesday, and it will be shipped increasingly. Since March 1941 only about 6 million pounds of whole-milk powder have been purchased, and such purchases were irregular until recently.

-- Butter --

Pure butteroil is made by melting butter, separating or floating off the fat, and removing the moisture in a vacuum pan. Removal of the water itself tends to prevent adverse bacterial and chemical activity which would result in rancid flavors. But the gas must also be removed from the fat to prevent oxidation. Vacuum-drying accomplishes this in part and packaging under vacuum with agitation assures removal of any remaining gases.

Butteroil keeps well when properly made and packed, even at room temperature. It can be used directly for cooking, or reconstituted into "butter" by the incorporation of dried skim milk, water, and salt. The fact that it can be shipped without refrigeration even in hot climates is important in wartime. But, because of packaging and other difficulties, the Government is not purchasing dehydrated butter.

-- Cheese --

Cheese, which normally contains over 30 percent of water, has also been dehydrated. The product comes in the form of a flour. When water is added it can be made into a cake resembling processed cheese. The Government is not buying dehydrated cheese.

-- Meat --

Experimental work on the dehydration of meats was begun by the Agricultural Research Administration in February, 1942. Several different types of machines and processes are being studied and other machines will be, not with the idea of recommending any one of them but to meet the varied conditions in the industry. The work has involved not only the production of dehydrated meat with these machines but the analysis of samples sent in by commercial concerns co-operating in the project.

Wholesomeness, palatability, keeping quality, and nutritive value are the main factors in these studies. The dehydrated product should also be able to pack well under compression to save the maximum amount of space.

Much of the first experimental work has been done with a double drum drier in combination with a cabinet drier. Fresh meat is cut from the bone and the trimable fat is removed. The meat is then sliced into chunks and put through a mill equipped to grind it either in small or larger pieces, depending on the type of product desired. The ground meat is thrown between two heated drums which revolve slowly toward each other and are spaced a small fraction of an inch apart. These hollow drums are heated by steam under pressure to a maximum temperature of 337° F. The drums make one revolution (the time required varying in different experiments), during which the meat is in contact with the hot metal. It is then automatically scraped off and falls into trays.

This process cooks the meat, compresses it between the drums, and partly dehydrates it, removing about one-third of the water. The dehydration is completed in a cabinet drier, which is what the name implies--a cabinet in which the meat is placed on trays and through which there is a steady flow of heated air. At the end of two to three hours, provided the meat is not excessively fat, the water content has been reduced to about 5 percent.

This, of course, is only one of the several possible processes. Others are wholly or partly different in their operation. In any case, the thoroughly dehydrated product occupies about half the volume of the raw meat and weighs about one-fourth as much. It can be still further compressed in packaging. A hundred pounds of lean beef would give 25-30 pounds of dehydrate.

For practical reasons, the first experimental work was done with beef and it produced the first results that could be applied commercially. The first specifications were prepared and bids asked for early in July. Commercial dehydrated beef has been purchased by the Agricultural Marketing Administration, though as yet production is on a very small scale.

Much attention is now being given to pork in the experimental work with a view to preparing specifications for that product. The problem here is somewhat more difficult because of the higher fat content of pork and the tendency of the fat to deteriorate in a shorter time.

In preparing dehydrated meat for the table, the product must first be "reconstituted" by soaking for a time in water. It is then boiled vigorously for 10 minutes and simmered for 20 minutes more. Subsequent cooking depends on the type of dish desired. Meat ground in relatively large pieces can be made into stews and meat pie; the more finely ground product is suitable for meat loaf, meat cakes, hash and soup. Many of the dishes made of dehydrated meat have been pronounced undistinguishable from those made of the fresh product.

Packaging is one of the most troublesome problems in the meat dehydration work. Tin cans, of course, are a safe, reliable material, and so far they are the packages used. But it is desirable to use something else if possible because of the shortage of tin, and an intensive search is being made for suitable substitutes. The package must meet rigid requirements for safe-guarding the wholesomeness and palatability of the product under the most adverse climatic and other conditions.

In the experiments so far, the packaged products are stored for long periods at extreme temperatures, from 0° to 135° F. Careful bacteriological and chemical tests are made at intervals; the growth-promoting quality of the protein is tested with laboratory rats; and the vitamin content is being assayed. Taste tests are a regular part of the procedure, and experiments are conducted to work out sure-fire methods of cooking.

-- Location of Dehydrating Plants --

To date the greatest concentration of vegetable dehydration plants has been in California, but the plants now begin to extend into Idaho, Colorado, Washington, Oregon and Michigan, as well as into some Eastern States, particularly New York, New Jersey, Pennsylvania, Maryland, Maine, and also a few in the South, like Texas.

Orange juice concentrate is prepared mostly in Florida and California. That prepared for Lend-Lease equipment is usually processed in Florida.

Greatest concentration of egg-drying plants is in the mid-west, on a line running north from the east-center of Texas up through the grain belt. There are also a number of plants along the Mississippi Valley from Louisiana on up. Plants also are operating in the poultry regions of Washington and Oregon on the west coast, and as far east as Pennsylvania and New York.

Dried-milk production, reasonably enough, centers in the major dairy areas of Minnesota and Wisconsin, Michigan, and other Lake States, and in the great eastern milk-shed, New York, Pennsylvania, and Vermont, and in California, Washington, Oregon and Utah in the far west.

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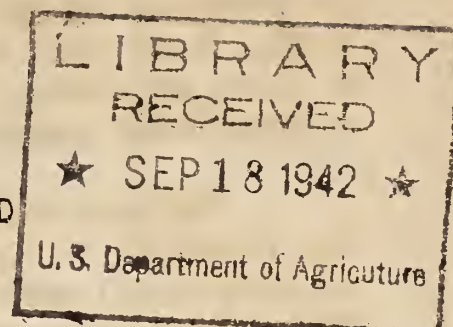
UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

August 17, 1942

Food for Freedom Program
Background Information Series - No. 10

WHEAT--AN IMPORTANT WARTIME LIVESTOCK FEED

We Have Too Much Wheat For Food



Wheat played an important role in World War I as human food. The raising of more wheat did much to carry out the slogan: Food Will Win the War. In the present conflict our wheat reserves may play a leading role, but this time as a livestock feed. This time our allies demand of us highly concentrated protein foods, mostly livestock products in dehydrated form -- milk, eggs, and even meat. Our enormous wheat reserves are already beginning to play this new role. We must now market considerable wheat in the form of meat, milk, and eggs.

We use a total of about 670 million bushels of wheat a year in this country, including feed and seed. Since 1890 our farmers have never produced less than 500 million bushels of wheat in any year, and even in the poorest crop years we produce almost all our domestic requirement. However, when we started harvesting this year's crop we had a carry-over of at least 635 million bushels, almost a normal year's supply.

In the extreme drought years of the middle thirties our production was only about 150 million bushels under our consumption, so this year's carry-over in our Ever Normal Granary would tide us over four consecutive years of extreme drought. Forecasts for 1942 indicate that our wheat crop will exceed our domestic consumption by over 100 million bushels. This would result in an enormous carry-over of 753 million bushels -- bigger than many annual harvests. We lack storage space for so much wheat.

Wheat Must Replace Some Corn as Feed

In other words we are producing wheat faster than we are using it. The reverse is true of corn, however. This situation has special wartime significance for Corn Belt grain producers, for Western wheat growers, and for livestock producers the Nation over. For we have millions of bushels of wheat not now needed as human food, with thousands of bushels being piled up on the ground for lack of storage, while our corn reserves are declining. Meantime our annual use of corn is increasing by millions of bushels.

This year we are using 150 million bushels more corn than we produced last year. Next year, if no more than the normal amount of wheat is used for feed, we should use more than 200 million bushels more corn than we are producing this year. Thus far, grains stored in the Ever Normal Granary have enabled us to break all records for turning out livestock products. But if this wartime level of production is to be maintained we must look to wheat as a livestock feed. The expected increase in corn production will not close this gap.

From the viewpoint of making flour we have hundreds of millions of bushels of surplus wheat. From the viewpoint of maintaining wartime production of meat, milk, and eggs, and of making synthetic rubber we have not a bushel of surplus.

The most important use of corn is in pork production. The pig crop is expected to increase 20 million this year to a total of around 105 million head. Next year there may be a combined spring and fall pig crop of 110 million or more. We also have record numbers of cattle and poultry and increased milk production means more grain fed.

Why not simply raise more corn then? This is not as simple as it seems. The pressure on Corn Belt land increases rapidly and any substantial increase in corn would have to come from there. The Food for Freedom Program requires many other lines of production from Corn Belt farmers -- soybeans for oil and the new war crop, hemp, for example -- which will require thousands of their acres next year. The Department is advising farmers in the Corn Belt to cut down on wheat to make room for more urgent war crops.

On the other hand, there are many acres in the West which can produce more feed per acre from wheat than from any other crops. Furthermore, many Western wheat ranches are unequipped to produce anything else but wheat on large scale. These ranches cannot readily be shifted to the production of other war crops. But with their large-scale mechanized equipment they can produce wheat with less manpower than they would require for most other crops. Labor also is a consideration.

Wheat as a Livestock Feed

Wheat is an excellent livestock feed. The main reason farmers do not usually feed it in large quantity is because of its price. Many farmers also have gotten into the habit of regarding wheat as a money crop and a food crop, and other grains as feeds. When corn is cheap and plentiful, farmers rarely use much wheat for livestock feed. Yet when drought reduces the corn crop, when the price of wheat is lower than that of corn, or the corn crop fails to keep pace with the production of young animals, the value of wheat as a feed is rediscovered.

Furthermore, wheat has to be coarsely ground or rolled for cattle, horses, and young chickens, and preferably also for swine. Corn may be fed on the ear, which saves money and labor. Wheat also tends to form a sticky, pasty mass when chewed, hence is supposed to be less easily digestible than other grains. But coarse grinding or mixing with bran or one of the other grains overcomes this tendency to stickiness. Wheat should not be finely ground for livestock feeding.

Wheat vs. Corn as Feed

Pound for pound wheat is equal to corn in feeding value. It is better in most respects than barley or oats. It contains somewhat more digestible protein than corn, a little less fat, and slightly more carbohydrate. It is definitely higher than corn in energy value. It is also higher in net energy, total digestible nutrients, and carbohydrate than either oats or

barley. Its low crude fiber content gives it an advantage in digestibility over barley and more especially over oats.

None of the grains is a complete feed, of course. They are all deficient in essential minerals and also in the better quality proteins which are necessary for the physical growth and development and the proper functioning of farm animals. These deficiencies are supplied in other livestock feeds - pasture grasses, hay, silage, and protein supplements, in particular oil-seed presscakes and meals - linseed, cottonseed, soybean, and peanut, all of which contain from 37 to 45 percent of protein.

The proteins of both corn and wheat are deficient in certain essential amino acids, hence the necessity for supplementing with the oil-seed presscakes, tankage, or other high-protein feed. On the other hand the protein of wheat bran is very high in essential amino acids. Long regarded as valuable in the main for adding bulk to the diet, the bran is now known to rate high in food value. Rats grow twice as fast on bran as on white flour, for instance.

Green feeds also supply vitamins, some of which the grains lack to a large extent. Yellow corn does supply some vitamin A in the form of carotene, but leafy-green hays are better vitamin sources in dry-lot feeding. Hence there need be no vitamin A deficiency merely because wheat is substituted for yellow corn in a ration containing carotene-rich forages.

Wheat, therefore, is a fine feed. It is fully equal to corn in feeding value. Indeed hogs and beef cattle use wheat nutrients slightly better than they do those in corn. Often the best results are obtained from feeding wheat with a mixture of other grains. These mixtures can contain at least 50 percent of wheat, sometimes more. At the moment the price consideration does not prevent the use of wheat instead of corn.

The Price Situation

Congress has authorized the Department of Agriculture to make 125 million bushels of Government-owned wheat available for feed at 85 percent of the parity price for corn. At this price level wheat is a bargain. In making price comparisons with other grains, however, the pound weight per bushel should be considered.

A bushel of corn weighs 56 pounds and a bushel of wheat 60 pounds. Wheat at \$1.07 a bushel is therefore as economical as corn at \$1. Because hogs and beef cattle use the nutrients in wheat slightly better than those in corn, a bushel of wheat at \$1.12 is equal to one of corn at \$1 for these animals. The feeding value of a bushel of barley calculated on the same basis is 80 cents.

How Wheat Can Be Used for Livestock

According to the Missouri Agricultural Experiment Station, good-quality wheat has proved itself to be worth as much as 10 percent more than corn, bushel for bushel, for feeding hogs. That means it takes 10 percent less of feed to make a pound of gain. Hogs also gain faster on wheat than on corn

and find it more palatable as well.. One-half less high-protein supplement is needed with wheat than with corn, while wheat also produces a better finished hog, a more desirable carcass, and gets him to market in 10 days less time, on the average.

Experimental feedings of half wheat in the grain ration have given good results with dairy cows. When used in a balanced grain ration as a substitute for one-third to one-half the corn, wheat is considered equal or even superior to corn.

Excellent egg production has been reported from pullets kept in cages and fed a mixture containing 84 percent of unground wheat.

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